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SUGGESTIONS FOR AN IDEAL COURSE IN THERAPEUTICS *

W. A. BASTEDO, M.D.

Assistant Professor of Clinical Medicine, Columbia University College of Physicians and Surgeons

NEW YORK

My text I take from McCrudden: "The teaching of therapeutics is one of the weakest points in the training of the medical student." Ideal, as I employ it, does not mean visionary and unattainable perfection, but rather "that which is conceived as supremely excellent or very desirable." I shall consider the subject under three headings, namely, the pretherapeutic teaching, the theoretical therapeutic and the clinical therapeutic teaching.

I. PRETHERAPEUTIC TEACHING

To make any course successful it is requisite that both students and teachers shall have adequate preliminary training in the fundamentals on which the course is based. One of the criticisms often aimed at clinicians in the dispensary and hospital is that they teach many absurd things in treatment because they are familar with neither physiology nor drug actions. In some measure this is true. But the ultimate remedy lies, not in abolishing the teaching of therapeutics by merely clinical men, but in increasing the time allotted in the curriculum to the pretherapeutic subjects, physiology, physiologic chemistry and pharmacology. Our present students, some of whom will in time become the teachers and leaders in medicine, must be more highly educated in methods of physiologic and pharmacologic thought, and must by the experimental method receive greater instruction in how to make observations, how to draw inferences and how to collate results. It goes without saying that the physiology and pharmacology teachers have a right to expect that the material of their teaching shall be utilized in the later years.

II. THEORETICAL THERAPEUTIC TEACHING

The purpose of theoretical therapeutic teaching is to orientate the student in the subject, that is, to familiarize him with the whole matter of it.

In this course it is necessary that the student should learn how to combat every symptom that may appear at every phase of every stage of each of the diseases of internal medicine. He does not study individual cases. But since only rarely in any patient do all the symptoms require treatment, it should be the effort of the teacher to impress this on the student by pointing out the probable course of a patient's illness if this or that symptom remains untreated. In this course, furthermore, it is necessary to write prescriptions, but the teacher should discourage the student from attempting to memorize set prescriptions. Last, but not least, the student should be made to justify or condemn all therapeutic recommendations by physiologic and pharmacologic argument; and because of this the teachers are best chosen from among those clinical men who have had intensive training in pharmacology or experimental therapeutics.

All didactic lectures should be abolished except a very few that may deal with principles, such as those of dietetics, serum therapy, electrotherapy and other special therapies; and the teaching of each of these should be assigned to the department to which it naturally belongs, for example, the principles of serum and vaccine therapy to the departments of serology and bacteriology, and the principles of organotherapy to the department of pharmacology. It is not to be expected that the principles underlying these therapies can be adequately taught by a clinical therapeutist.

III. CLINICAL THERAPEUTIC TEACHING

A. *The Type of Clinical Teacher.*—In the best teaching in any subject it is a fundamental proposition that facts must be handled by the student at school as he may be expected to handle them in the world at large; or, to apply this idea in therapeutics, the undergraduate must be taught to handle the facts on which the treatment is based as he may be expected to handle them when he is practicing medicine. It follows from this that his clinical therapeutic teachers must be practicing physicians, men who will understand the needs of the sick patient in the home and the physician's office, and will take cognizance of all factors, from outside the patient as well as from inside him, that may influence the patient's mental and physical comfort. I am mindful of the words of Sir James Mackenzie in speaking of cardiac decompensation: "It may be taken as an axiom that if the patient does not get sufficient sleep he will never get well," and of those of Ray L. Wilbur: "Reassurance is often as comforting as opium and has fewer after-affects." Indeed, a sick body is not infrequently only the physical expression of a sick mind. In many instances, the removal of an outside influence has an important scientific value as a measure of treatment, and has as pronounced a physiologic action as the most potent of pharmacopeial drugs. Better for our students we could not do than have them see at work those clinicians who appreciate the personal relations of the patient, and who not only inspire by their erudition and enthusiasm, but also show that humanity that always

* Chairman's address, read before the Section on Pharmacology and Therapeutics at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

leaves the patient, whether poor or rich, better in spirit because of the medical interview. Such men always remember that they are treating a patient that has a disease rather than a disease that has the patient.

B. *Deciding on the Treatment.*—Furthermore, students should be taught to practice as the great consultants practice. These, when outlining a plan of treatment, remove themselves from the patient and the patient's friends, to sit down quietly and review the data at their disposal in a clear, cold, logical manner, without sentiment, until the plan is matured. Then, in dealing with the patient, they show kindness and consideration.

In teaching the student in the dispensary or at the bedside, why expect him to give offhand the treatment of each individual symptom without consideration of the patient as a whole? Let us rather habituate him to getting away from the patient, in small clinic sections, perhaps, for that moment or two of thought which will permit a mental survey of all the probabilities in the particular case. For in our clinical work we are not treating tonsillitis, typhoid fever and gastric ulcer, each with its numerous possibilities in the way of symptoms, but we are treating a particular patient with tonsillitis, typhoid fever or gastric ulcer at the particular stage and with only such conditions or symptoms as that particular case manifests. If we teach a student to exact uninterrupted moments for consideration of the treatment, may we not save him later from the many therapeutic failures which result, at least in part, from a habit of permitting submergence of his thoughts on the patient's symptoms by an irrelevant introduction of the anxieties of friends, and sometimes the neighborhood gossip?

C. *The Use of Specialists.*—We are teaching students that they may become practitioners. Then, in order to teach the student in a practical manner, we must teach him to think and act as he should when he is a practitioner. Therefore, let us inquire into the method of the higher type of practicing physician. When he wants the very best for his patient, he does one of two things: either he calls on a specialist, or he adopts a plan of treatment that has been approved by specialists. Why does he call a specialist or accept as valuable only what the specialist approves? Because he looks on the specialist as one who, by concentrating his knowledge, his powers of investigation and his clinical cerebration on a particular class of patients, is able to diagnosticate and apply measures for relief in a more certain manner than can be done by others.

Perhaps the first group of men who separated from general medicine to practice a specialty were the surgeons. Then followed neurologists, gynecologists, and all the others that we have, until eventually, for sheer self-protection, the leaders in medicine who remained were forced to give themselves a name, and for want of a better, chose that of internists working in the field of internal medicine. But with the great advances in this field it soon became evident that no one man could give intensive attention to the whole of it; and as a consequence, in internal medicine itself, alone or sometimes joined with related subjects, there have come to be specialties, such as gastro-enterology, cardiology, syphilology, tuberculosis, tropical diseases, contagious diseases, kidney diseases and the diseases of metabolism. We even have specialists in diabetes, in intubation, in transfusion and in hay-fever. As we have general surgeons and special surgeons, so we have general internists and special internists. Is this specialism absurd? Not at all! Medicine has possibly lost something by specialism, but it has gained much more.

That eminent and inspiring teacher, Sir William Osler, said of specialists:

> They have contributed largely to inculcate the idea of thoroughness. Better work is done all along the line, and a shallow diffuseness has given place to the clearness and definiteness which comes from accurate study in a limited field. The day has gone by for Admirable Crichtons, and although we have a few notable illustrations in our ranks, of men who have become distinguished authorities in several fields, such are necessarily rare and likely to become still more uncommon.

This he said twenty-five years ago. Think of the strides in specialism that have been made since that time! Further, Dr. Osler says:

> The public has not been slow to recognize the advantage of a division of labor in the field of medicine. It must, indeed, be a comfort to thousands to feel that in the serious emergencies of life expert skill is now so freely available.

In any subject in medicine, for the latest and most approved methods, whom do we ask? Is it the general practitioner? Or, in internal medicine, is it the general internist? For answer we need only refer to the program of this section, on which we see papers scheduled from eminent specialists, two in transfusion, two in alcoholism, two in the realm of anaphylactic or related phenomena, one in diabetes and one in the field of radium therapy. We asked these men to address us because they are specialists and therefore authorities in the subjects on which they are to speak. I would not have you think for a moment that any one of these men knows nothing beyond his specialty. On the contrary, these and all worthy of confidence in a specialty are men who, while knowing everything about one thing in medicine, know also something about every other thing in medicine. Did it ever strike you that one of the grandest features about specialists is that they are all preeminently therapeutists, their whole aim in laboratory, hospital, dispensary and private practice being to attain therapeutic results?

If, then, we grant that the greatest heights in diagnostic skill and successful treatment are reached by specialists, and that they are the men who can give the best to the general practitioner, let us by all means utilize them to give the best to the student.

To this I give emphasis because, in spite of its appreciation and utilization by the profession at large and by the public, specialism inside the realm of internal medicine has failed to find encouragement in some of the more conservative, or perhaps I might say more antique, colleges and hospitals. In internal medicine we are almost at the dawn of specialism, and I am sure that nobody here thinks that that trend is going to stop where it is.

D. *Dispensary and Hospital Services.*—Even hospital training leaves the graduate therapeutically unfit; and this may be accounted for, without reproach to the attending physicians, by the fact that today the hospital services are as large as they were when internal medicine was a much smaller subject. So that by the time the attending physician has ended his discussion of the complex and intellectually stimulating problems of diagnosis, he lacks the time to do more than outline the treatment in a brief and routine fashion, and frequently leaves it entirely to the youth-

ful house physician. Here, I myself can cast no stones. Because of this tendency we see every day in our best hospitals cardiac patients given caffein all day to the verge of poisoning and, as a consequence, failing to get necessary sleep until deluged with dangerous doses of morphin; nephritics with edema nauseated by large daily doses of salts to remove liquid, but not having liquid stools; patients with chronic constipation left to the chance shots of a sapient junior who makes evening rounds; and diabetics receiving diets in which all or most of the daily allowance of carbohydrate is given at only one of the meals, so that sugar unnecessarily continues in the twenty-four-hour urine. And the most astounding fact of all is that often the attending physician passes these things unnoticed. And interns with this training, and students so trained, we are turning out to practice medicine.

By a proper division of labor in the hospital and dispensary, and by having an adequate force, which should be made up partly of specialists, each man in his own sphere can be assigned that amount of work which will permit him to give *equal attention to both diagnosis and treatment*. In other words, the rounds in the hospital must be just as much therapeutic as diagnostic. Not only will this result in gain for the attending physicians, the interns and the students, but it will prove a very great boon indeed to the now only too frequently mistreated patient. Moreover, it will permit a proper collation of the results of treatment, a matter on which I lay great stress. With proper assistance, it should be the duty of every attending physician to summarize on every record, each week or on the patient's discharge, the therapeutic measures employed and the results obtained. In course of time this will furnish many data relative to the successes and failures of like treatment in many cases with like conditions, and to the comparative values of different methods of treatment, including, in some instances, the method of watchful waiting.

It would seem that even now, as the result of laboratory and clinical research, every therapeutic recommendation might properly be required to meet the challenge of the experimental test; or if it cannot, must be accepted only tentatively and transfixed with a question mark.

E. *Classes of Teachers.*—I am well aware that there are two seemingly irreconcilable ideas regarding the teaching of therapeutics, namely: Shall therapeutics be taught by the clinicians in each branch of internal medicine, or, since at the present time we must still employ drugs extensively, shall it be taught by those who have given such intensive attention to the action of drugs that they can think physiologically and pharmacologically? At present both classes of teachers must be used. In the future, whether near or distant, I trust that all advanced medical men will think physiologically and pharmacologically.

F. *Demonstrations in Special Therapies.*—Instruction should be arranged for in the use of other remedial measures besides drugs and psychotherapy. In certain of the special therapies, demonstrations should be given in the dispensary or hospital best equipped for the purpose, and I wish that all hospitals might be so equipped. For example, electrotherapy might be taught in the neurologic clinic or hospital ward, mechanotherapy in the orthopedic clinic or in a hospital with a Zander equipment, and massage in the clinics of medicine, surgery and orthopedic surgery.

G. *Need for Large Clinical Institutions.*—I might further suggest that for concentrated teaching in medicine we need large clinical institutions so that the patients of each kind will be sufficiently numerous to permit a proper grouping and consequent satisfactory division of labor. This completes my suggestions.

PRESENT NEED AND TENDENCY

A physician's ability to treat his patients successfully is what constitutes his direct personal value to them, and it is the ultimate *raison d'être* of his calling. Granting, then, the truth of our text that today "the teaching of therapeutics is one of the weakest points in the training of the medical student" this is my ideal: *In the college curriculum and in the hospital have treatment given the consideration that it demands in the practice of medicine,* and have it taught both by special students of therapeutics and by those who would be considered by the medical world authorities in the sundry groups of diseases.

To install improvements or to change a plan, no time could be more propitious than the present, for already eight states, before giving a license to practice medicine, demand a year of internship in an approved hospital; and eight medical schools have increased their course of study to five years. Other states and other schools must soon follow. Hence, in the resulting enlargement of the curriculum and the increased standards of practice, may we not hope that these ideals may be reached?

SUMMARY

My suggestions for an ideal course in therapeutics are:

1. In the pretherapeutic teaching, insure habits of physiologic and pharmacologic thought by allowing more time in the college curriculum for training in physiology, physiologic chemistry and pharmacology.

2. For the theoretical teaching, orientate the student in the subject by systematic quiz-lectures covering all the diseases of internal medicine in all their phases. Select the teachers for this from among those practicing physicians who, through intensive work in pharmacology or experimental therapeutics, have acquired special ability and special knowledge for thinking physiologically and pharmacologically. Omit didactic lectures, except the few required to teach principles in special fields of therapy, and assign these to the departments best fitted to give them.

3. For the clinical teaching: (*a*) Teach the student to review the patient as a whole rather than as a collection of isolated symptoms, and teach him to isolate himself while he deduces the treatment from the available data.

(*b*) In the dispensary and hospital, utilize specialists in the sundry branches of internal medicine.

(*c*) In the hospital, increase the medical staff and, as a consequence, reduce the size of the service assigned to each attending physician. Demand that rounds be therapeutic as well as diagnostic, and that the results of all therapeutic measures be recorded.

(*d*) Have special clinics and ward teaching devoted to treatment by clinicians who are versed in the actions of drugs and are willing to devote special attention to the problems of therapeutics.

(*e*) For teaching in the special methods of therapy, arrange for demonstrations at those dispensaries and institutions in which the necessary operator and equipment are available.

(*f*) In the dispensary and hospital have the patients grouped to permit of a satisfactory division of labor.

(*g*) Above all things, teach the student to think as the practicing physician should think.

57 West Fifty-Eighth Street.

EFFECT OF THE WAR ON MEDICAL EDUCATION *

HORACE D. ARNOLD, M.D.
BOSTON

The emergency of the great war put us all, as a nation and as individuals, to an unusual test of efficiency. Much of value may be learned by the study of this experience. It is not only desirable that the knowledge thus gained should be utilized for the benefit of the community, but it is our duty to the soldiers who won this war—especially to those who made the supreme sacrifice—to make the most of this unusual opportunity and to secure for the people of the nation benefits which will in part offset the devastation of war.

This duty to learn lessons of value from our experience in the war applies to all branches of human endeavor. We are asking what we may learn that will improve medical education. We have properly taken pride in the great advances in medical education in the past fifteen years—but many of us were too well satisfied. Of course, we knew we had not reached our ideal, but I think few of us realized how far the average medical school is from that ideal.

"By their fruits ye shall know them." Approximately one third of the physically fit registered physicians of this country were actually submitted, in army service, to a searching practical test of efficiency. Never before was there such an opportunity to test the product of our educational institutions in medicine. We have in this country a few of the best medical schools in the world, yet not one but can learn much of value from the deficiencies of some of its graduates under this "acid test." The general verdict in regard to the average graduate from what have been regarded as good medical schools is disconcerting to earnest medical educators. The need for further improvement is greater than we thought. It is probable that this lesson, learned from the war, will give added impetus to our endeavors to improve medical education.

Already these matters are receiving attention. It is too early to formulate final conclusions. Statistical data are not yet available for this study. Yet perhaps some of the most valuable lessons will be learned from the general observations and impressions of intelligent medical teachers who have been in a position to observe the qualifications of considerable numbers of medical officers. My contribution on this subject is based in part on personal experience and in part on the observation of others. It is not intended to be an exhaustive or complete study of the subject—rather is it an opportunity to record some personal impressions and conclusions, while the events are still fresh in mind. It has been my aim to avoid dogmatism and to check my personal opinions, as far as possible, by the experience of others who had better opportunties for observation in active field service.

DISORGANIZATION OF MEDICAL EDUCATION

The immediate, obvious effect while the war lasted was the serious disorganization of medical education. The chief factor was the loss of the teachers who volunteered for military service. This, however, was a temporary effect, which will soon be recovered from as these men return to civilian life and duties. It is believed that they will bring to their teaching a stronger feeling of service, a greater earnestness of purpose, and a broader knowledge of the application of medical science, which will make them more valuable teachers.

The removal of so many of our best teachers had an undesirable effect on the quality of the instruction given in many cases. This, of course, has varied in different places. How serious this injury may be, and how much it will affect the thoroughness of the training of those who were studying medicine during the war, cannot be estimated at the present time. This is a problem that demands serious consideration on the part of medical schools that suffered in this way; and the defects can be offset, to some extent at least, before these students graduate. On the whole, the ideals and standards of medical education were maintained unimpaired during the war, and it is not believed that these standards will be lowered in any way as a result of this experience. Rather has the need of maintaining high standards been emphasized.

The effect of such impairment of the quality of the instruction was lessened because of the greater earnestness and better application on the part of the students. This was due, in the case of the better students, to the spirit of earnest enthusiasm so commonly engendered by the war, which caused the individual to put his very best effort into whatever he was doing. These students were "doing their bit" in the way that was considered wisest. But under the draft regulations and the resulting army supervision of medical education, the dull, lazy or indifferent student found a special incentive for work in the knowledge that failure to keep pace with the progress of his class meant active service as a private in the ranks. More than one dean has expressed the wish that some similar incentive to work might be a permanent feature in education.

BENEFITS FROM ARMY CONTROL

The enforcement of the regulations of the Surgeon-General, in carrying out the selective service regulations, was not only useful in maintaining the accepted standards of medical education, but resulted in the discontinuance of a few of the poorest schools. The privileges extended to medical students by the selective service regulations were limited to students in "well-recognized" schools—and the standard adopted for a "well-recognized" medical school was recognition by the state boards of medical examiners in 50 per cent. of the states. This lenient, though fair standard practically excluded the schools in Class C of the classification of the American Medical Association. So large a proportion of the students in these schools were taken by the draft that several of these schools found it impracticable to continue.

In another way the army control was useful: in securing a stricter enforcement of regulations, especially those concerned with the admission and promo-

*Owing to the lack of space, portions of this article have been omitted. The complete article appears in the author's reprints.

tion of students, and greater uniformity in the regulations governing these matters. Laxity in this respect was not usually intentional on the part of the school authorities. It was most commonly due to carelessness on the part of assistants; but sometimes it was due to the indifference of those responsible for the administration of such regulations, or to the persistence of a leniency in interpretation that was more common a few years ago than it is now. As a result of this army supervision the authorities of the medical schools in general have, I think, a keener appreciation of their responsibilities for the enforcement of such regulations; and care in these matters will continue and medical education will be improved in consequence.

DEFICIENCIES IN MEDICAL TRAINING

Chiefly as a result of the stimulation and wise guidance of the American Medical Association, through its Council on Medical Education, great improvements in medical education have been brought about in the past fifteen years. Looking back at the conditions that existed before 1904, we may well feel proud of the advance that has been made. But there is a danger that such feeling of pride in what has been accomplished may develop into a feeling of unwarranted satisfaction, and that we lag in the arduous journey toward the attainment of a really satisfactory condition of medical education. Looking behind to see how far we have traveled is not always the safest or best way of estimating how far we still are from our journey's end, especially when we journey toward a goal that still advances during the time that we are traveling.

It was to be expected that many of the older graduates, who received their training before these advances were generally adopted, would make an unsatisfactory showing in the efforts of the Medical Department to carry to the fighting men the benefits of modern scientific medicine. But deficiencies in training were not confined to these older men—or to the graduates of poor schools. The proportion of younger men—of those who graduated within the past decade—was very large, and the experience of the Army is a reasonable test of the results of modern medical education.

Experience as chairman of an examining board for the Medical Reserve Corps enables me to say that the poor medical schools do not turn out safe practitioners for the community, even though they succeed in passing the state boards. My service as an examiner for the Medical Reserve Corps extended over a year and a half, from the time of the mobilization for the Mexican border, in the late spring of 1916, until I was ordered to the Surgeon-General's Office toward the end of November, 1917.

Definite instructions that candidates from low grade medical schools should not be examined for the Reserve Corps were not issued by the Surgeon-General until about the first of September, 1917, and up to that time candidates who were graduates from such schools were examined by our board. With very few exceptions, candidates who graduated from Class C medical schools failed to pass the examinations successfully. It has been asserted by one of the local Class C schools that the Boston examining board was prejudiced against the graduates of that school, because the members of the board were graduates of the Harvard Medical School. Such a claim is unjustified, is practically absurd, because the members were among the leading physicians of Boston, and no explanation of the attitude of the board is called for because of any such charge. But such an explanation is important in estimating the value of our study of the product of poor medical schools. What I have to say applies to all Class C schools more or less, the degree varying in direct proportion to the poorness of the school.

The function of the examining board was to select those canditdates who were qualified physically, morally and professionally to care properly for our soldiers. We were acting for the Army only, and it was definitely understood by all members of the board that the selection of physicians for military duty was to be based on a fair judgment of the evidence of qualifications for such duty, and was not to be influenced by any preconceived ideas on the subject of medical education or otherwise. It was fully recognized that some men of ability might for some reason have attended a poor medical school, and might especially through subsequent study or experience, have overcome this handicap and become qualified for the duties in question. The need for medical officers was sufficiently great to demand the acceptance of all properly qualified candidates.

If a man was found to be qualified physically and morally, the next step was to ascertain his professional attainments by an oral examination. If this was not satisfactory, he was given a further chance in a written examination. The oral examination was under the control of the board, but the written examination was set by the Medical Department of the Army, the sealed papers being opened only at the time of examination, and in the presence of the candidates. While the papers in the written examination were marked by members of the board, they were sent to the Surgeon-General's Office for review, and for independent marking if desirable. The system was practical and fair, both in conception and execution.

The patriotic desire to serve in the war was not limited to the graduates of good schools, and it was the aim of the examining board to give the patriotic graduates of poor schools — as long as they were permitted to examine them — a square deal and an absolutely fair chance to demonstrate proper professional qualifications. Some of these men had ability more than sufficient to become excellent physicians, had they had an adequate training, and the members of the board were greately impressed with the injustice, both to these men and to the community, by the poor schools which offer an inadequate training when a satisfactory training can be obtained in better schools at no greater expense.

It may be said in general that the brighter graduates from Class C schools showed a fair knowledge of matters that could be learned from textbooks and quizzes. They were decidedly deficient in practical knowledge of disease, such as would be gained from good laboratory and bedside teaching. They were particularly deficient in any practical knowledge of contagious diseases and other infections—matters of extreme importance not only in the camp life of the Army, but in the ordinary life of the community.

Two of my stock subjects, in the oral examination of such candidates in medicine, were the means of early detection of typhoid fever and of tuberculosis. I think every one will admit the importance of the recognition of each of these diseases in an early stage, both for the proper care of the individual and to prevent the spread of these diseases through the com-

munity or the camp. Yet hardly a graduate from a Class C school was found who, without further instruction obtained elsewhere, was qualified for such work. Physicians so poorly qualified are a menace to the public, for they assume the responsibility of protecting the public from the danger of the spread of such diseases.

WHY SUCH SCHOOLS SHOULD CEASE TO EXIST

Actual experience with medical officers in the field and in camp showed that the Army standards were not too high, but rather raised the question whether the standards, or their administration, were not dangerously low. If these requirements are essential for the proper care of soldiers, are they not equally essential for the proper care of the public in time of peace? It seems to me that it is high time for the medical profession to say even more boldly and emphatically to the public that low standard medical schools and careless or indifferent licensing boards in medicine are a menace to the health of the community. There is no longer a reasonable excuse for the existence in this country of a medical school so poor as to be placed in Class C by the Council on Medical Education. After all the educational work on this subject by the Council, and patient waiting for improvement, a school that remains in this class must have in control men who cannot, or who will not, raise the standard of the school to a proper level. Such schools should cease to exist. If they continue, they should not be recognized by state licensing boards in medicine. Yet by the last reports some of these schools were recognized by from a third to nearly half of the licensing boards.

NEED FOR IMPROVEMENT IN METHODS OF LICENSURE

I know very well that in some instances the licensing boards in medicine recognize Class C schools because they have no legal authority to discriminate in their recognition of medical schools. These boards should endeavor to get such legal authority from the legislature. The experience of the Army in finding so many licensed practitioners of medicine professionally unfit for the medical care of our soldiers should be a strong argument for improvement in the methods of licensure. Improvement in this respect implies, first, authority to insist on an adequate medical training before a candidate is accepted for examination; and, secondly, a sufficiently thorough examination to test his efficiency.

In some cases it may be necessary to educate public opinion before such authority can be obtained. The opportunity for such education of the public is better today than ever before, for the war has given the millions of men in service a better insight into the value of a good doctor; the experience of the community in putting up with the scarcity of physicians—including those who were not qualified to take care of the soldiers—has given those who stayed at home a better insight into this problem. The medical profession will be derelict in its duty if it does not take advantage of this state of public opinion, and endeavor to secure better laws governing the licensure of physicians, and better enforcement of the laws that already exist.

This campaign for the education of the public should be pushed—not for the benefit of the medical schools or of the profession, but for the protection of the public itself—until a license to practice medicine is based on a satisfactory general education, a sufficient knowledge and practical training in the sciences on which medicine is based, and a proper theoretical and practical training in the fundamental medical sciences and in the clinical branches of medicine. Only after such thorough training is a physician qualified to recognize and correctly diagnose disease when it exists. Only with such training can he bring to the public the advantage of modern scientific medicine. If he has this foundation and is skilled in diagnosis, the question of the method of treatment may be left safely to his judgment. These requirements should be uniform for all candidates for licensure, whatever the method of care of the sick is to be; for the practice of any branch or form of medicine implies the ability to recognize conditions of disease.

Theoretically, if a man has the qualifications mentioned above, it matters little where or how he obtained his training. Practically such a training can today be obtained only in a good medical school and on the basis of the premedical education required by the better schools. A satisfactory test cannot be based alone on the best examination now given by any state board. Hence the importance of insisting that a candidate for licensure shall have had an adequate preliminary education and have completed his medical course in a really good medical school. This problem of the requirements before examination for licensure should not be permitted to be confused by any questions of schools of medical treatment, or sects or cults in medicine. And on this point also the public needs to be enlightened.

BASIS OF JUDGMENT OF SCHOOLS

Judgment of medical schools, irrespective of sect, should be based on actual performance, on the completeness and thoroughness of instruction, and on adequate equipment. It should not be based on the paper requirements of catalogues, which are too often a camouflage to cover inadequate training. Tabulations of subjects and hours — the common arguments of sectarian schools for equal recognition with regular medical schools—have no real value unless backed by laboratory and clinical advantages and quality of instruction equal to those of good medical schools. The same method of inspection that is applied to the regular medical schools has shown the schools of the so-called medical cults to be lacking in these essential respects, as far as such inspections have been permitted.

I have stated that Class C schools should not be recognized by state licensing boards in medicine. If the public were awake to their own interests, Class B schools and a number of schools at present ranked in Class A would also not be recognized. This statement is warranted not merely from a theoretical educational standpoint, but by the practical experience of the Army in this war. But there is danger in raising standards for licensure so rapidly as to get too far ahead of public opinion. It is a question how far such standards should be advanced as long as the public is so tolerant of medical cults as to allow their graduates privileges in practice which should be granted only to those who are thoroughly trained in the investigation and recognition of disease.

It is expected that the Council on Medical Education will soon make a new survey and classification of medical schools. The leniency in grading, wisely

exercised at the last classification, is not warranted now; and, if such classification is to mean much from an educational standpoint, a number of schools now ranked in Class A cannot be retained in the highest class designated by the Council. This question is complicated by the consideration that the Council has looked on Class A as a standard for acceptable schools, not only from an educational point of view, but also from the point of view of recognition by state licensing boards. As matters stand today, the practicable standard for recognition must be placed considerably lower than is desirable from the educational point of view. The lower limit for Class A schools should be raised somewhat higher than it is at present; but because Class A is the accepted standard for licensure in a number of states, it is not practicable to raise the limit to the level demanded by educational considerations alone. It would seem desirable to establish in some way a higher subclass, to include only those schools which are found to be *fully* satisfactory from an educational standpoint.

Army experience would seem to indicate that, in the rating of medical schools, greater emphasis should be placed on the thoroughness of the instruction in the fundamental medical sciences, on the methods by which the student is trained actually to apply this scientific knowledge to clinical cases, and especially on the extent and excellence of the teaching of clinical subjects to individual students. The textbook, the recitation, the didactic lecture, and the clinical lecture before a whole class still have their places in medical teaching; and valuable time would be wasted if *all* instruction had to be repeated over and over again to small sections. But a satisfactory clinical training can be obtained only in such small groups that the student can handle the patients himself, and can receive individual attention from a well-qualified teacher. Too many of our students in reputable schools have received most of their "clinical" training from amphitheater seats; they have had only written examinations to test their qualifications for practice; and, if they have taken an intern year, it has helped them little because the average hospital is poorly equipped and the staff too busy or too indifferent to instruct the intern, or not qualified to teach modern medicine. It is no wonder that these men in the army hospitals could not make a dependable physical examination of patients. The clinical teacher, with experience as medical chief of an army hospital, who in my hearing has expressed the greatest tolerance of such men, said: "After all they were no worse than the average practitioner in civilian life." I think he is right. But what a comment on the average training given in an average medical school!

VALUE OF INTENSIVE CLINICAL TRAINING

The Army has taught us another valuable lesson: that great improvement in such men can be secured by intensive practical clinical courses under competent instructors. Medical schools will render an immense service to the community if they will make adequate provision for similar training of practitioners. Adequate training means much more than the ordinary "postgraduate" course given in the past. Here is a definite need—of so great importance to the community that provision for such training might well be developed by state authorities. It is as legitimate public welfare work as the measures for preventing disease now being so widely adopted by public authorities.

CONCLUSION

Such are a few of the reflections that occur to me in considering what the effect of the war will be on medical education. The need of further improvement is clear. In some instances, the direction for such improvement is clearly pointed out. In others, careful study and deliberation will be necessary. I feel sure that medical educators will give these matters serious attention, and that the improvement of medical education will receive a great impetus as a result of our war experience.

THE FIFTH, OR INTERN, YEAR

JOHN MILTON DODSON, M.D.
CHICAGO

The fifth, or intern, year as a requirement for graduation in medicine has been in operation for a year in at least two institutions: the University of Minnesota Medical School and Rush Medical College. The methods of administration adopted in these schools are essentially the same, although they were arrived at quite independently. In each school the matter has been placed in the hands of a standing committee of the faculty. This committee determines what hospitals are to be approved, and posts or prints the list for the information of the students who are seeking internships. These lists are as yet provisional and tentative, and a student who contemplates accepting a service in a hospital not on this list reports the fact to the committee, which then investigates the hospital and decides on its acceptability.

REGULATIONS GOVERNING THE INTERN YEAR

Of the methods of procedure at Minnesota, Dr. Litzenberg, the chairman of the Committee on the Intern (called there the seventh) Year, writes:

> On account of the war, the seventh year requirement was waived last year for all men who entered the service. Others were required to take the seventh year in hospitals under our supervision. The exact number I cannot say. However, this year the whole class were required to take the seventh year. We had no difficulty in securing good appointments for all of the men.
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> We have no printed rules and regulations which we can give you, but our requirements are about as follows: Each student is required to take his seventh or intern year in a hospital approved by the Seventh Year Committee. This requirement conforms in the main to the rules laid down for a Class A hospital by the American College of Surgeons. This must be of sufficient size, must have a well conducted clinical laboratory, roentgen-ray department, and an organized staff of high class men. Each student is required to register with the registrar of the university for his seventh year, giving the name of the hospital in which he is to serve his time. We will not let our students go to hospitals unless they will agree to furnish them high class clinical instruction, and we ask the superintendent of the hospital to oversee the instruction which the interns are to get or to nominate some member of the staff who will be responsible for the teaching of the interns. It is our desire to arrange systematic teaching for the interns and not the hit or miss "knowledge by experience" plan.
>
> We require that the student is to do his work in such a manner that he may be recommended for his degree after he has spent the seventh year in the hospital. Our requirements are explained to the superintendent of the hospital in cases where the hospital is not here, so that they understand our requirements. The interns are given distinctly to understand that this is an additional student year, and that the kind of

work they do will determine whether or not they will receive their M.D. degree. In Minneapolis and St. Paul, members of our own teaching staff supervise the work of the interns. It is their duty to see that the intern does his work well and that the staff give him proper instruction.

We feel that this additional year is necessary for the proper preparation of men to begin the practice of medicine, but we also feel that we have only made a beginning and that the work must be carefully planned and organized. If interns are to serve only in the same manner as in the past, there is no advantage in the additional year; but, under the proper supervision, we are convinced that it can develop as one of the greatest advances in medical education in recent years. On account of the interference of the war, this is the first year that it could be given a fair test. We anticipate that it will prove our contention—that a properly conducted clinical year in a well managed hospital, under systematic instruction, will greatly add to the quality of men turned out to practice.

The method pursued in Rush Medical College is quite similar, and printed regulations are given to each student. The work of the fifth year may be completed by an internship in an approved hospital or by a year of advanced clinical work in one of the departments of the college. On the satisfactory completion of the year's work, the student is entitled to his degree of Doctor in Medicine.

The student who elects an internship must secure a position in a hospital either by examination or appointment and immediately notify the dean, who will inform him promptly whether or not the hospital chosen is approved. During his service, the intern is required to report to some member of the faculty to whom he is assigned, and to submit copies of some of the case histories written by him. Whenever possible, the supervisor will be a member of the medical staff of the college in which the student is taking his intern service. If a student abandons an internship without the consent of the hospital authorities or without valid and ample reason, he will be denied his degree. An examination may be required at the end of the intern service. Unless excused by the faculty, the student must be present at the convocation when his degree is to be conferred.

The supervision of internships is under a committee on the fifth year assisted by such members of the faculty as they may designate. Each supervisor, so far as possible, shall visit and inspect the hospitals in which the interns under his charge are serving. He shall see to it that reports of the work done and case histories written by each intern shall be submitted as often as is deemed necessary. At the end of each intern service the supervisor will obtain from the hospital a report as to whether or not the intern has done satisfactory work. He will then make his report to the committee on the fifth year, stating whether each student under his charge is entitled to receive his degree with or without examination.

The committee assigns to each member of the class a "faculty supervisor" to keep in touch with the students during their year of hospital service, to advise and assist them and to report to the faculty, through the fifth year committee, when the service of each intern has terminated, his recommendation as to whether or not his work has been satisfactorily performed, and his eligibility for the degree. About 75 per cent. of the interns last year were under the immediate supervision of the members of the faculty who were members of the medical staffs of the hospitals in which they were serving.

Fortunately, it has been possible in many hospitals to enlist the services of Rush graduates who are familiar with the ideals of standards of the institution, and who are glad to assist in this new movement. At intervals the resident supervisor sends to the faculty supervisor one or more clinical histories taken at random from those written by the intern. These are reviewed and later returned to the hospital. Each intern is encouraged to undertake, in addition to his routine duty, some piece of investigative work, the results including a survey of the literature on that topic, to be embodied in a thesis.

REPORTS OF INTERNS ABOUT HOSPITALS

For several years, graduates of Rush serving internships in hospitals outside of Chicago have been asked at the close of their term of service to send to the college a detailed statement in reference to the hospital in which they have served, with critical comments. In this way much information has been gathered of great service to the students of later years in deciding on the hospitals in which they would accept service. Such evidence, in reference to the character of a hospital and of the professional character and ability of the staff, needs to be carefully scrutinized, for once in a while, the report from a student will give evidence of personal animus against some member or members of the hospital. Such exceptions have been rare. On the other hand, from no other source is it possible to procure such direct, accurate and unbiased information concerning the character of a hospital, especially as to the personnel of the staff, altogether the most important item both from the standpoint of the education of the intern and of service to the patients. These interns, after a year of service in the institution, are in position to know about it. They are mature men, averaging about 27 years of age at the time of entering on hospital service, and their judgment is very much worth while. I apprehend that in any comprehensive survey of the hospitals of the United States, such as is being planned by the American Hospital Conference, recently organized, no information will be found of more value than that furnished by those who have served as interns within their walls. Some of the faculty supervisors have sought this information by formal questionnaires sent to the interns under their charge; others have simply asked the intern for a description of the hospital conditions, to be expressed in his own way. It remains to be seen which is the more effective plan.

THE INTERN YEAR—A UNIVERSAL REQUIREMENT

No graduate should enter on independent practice without at least a year of experience at the bedside under skilled and careful supervision. The experience of the medical corps of the United States Army in the world war strongly emphasized this need. In former times this practical training was obtained at the hands of a preceptor. This preceptor plan, never so well carried out in this country as in Great Britain, began to fall into disuse when the fundamental medical branches, physiology, bacteriology, etc., began to advance so rapidly and the annual session in the medical school was lengthened to six, seven, and soon to eight or nine months. The rapid changes in the methods of general practice, moreover, soon made it difficult for a physician to give much formal instruction or technical training to his student. For twenty years

or more the preceptor system in the United States has been practically obsolete.

For the great mass of students, the hospital internship is today, as it has been for many years, the only means of securing such training. Such hospital service has always been sought and secured by a few—usually the more ambitious and capable students. Until a comparatively recent time, however, such positions were so few and the graduates so many, that it is probable that 80 or 90 per cent. of the physicians now in this country began the practice of medicine, by themselves, immediately after graduating from the medical school.

INTERNSHIPS NOW EXCEED THE NUMBER OF INTERNS

During the last fifteen years there has been a remarkable increase in the number of hospitals, while the number of graduates has lessened. At the present time there is an annual demand for over 3,500 interns, while the number of graduates from the medical schools of the United States is less than 2,700 each year. For nearly a decade it has been possible for every graduate of a first class medical college to secure an internship, and from 90 to 95 per cent. of graduates of the best medical schools have done so. In five states, a year of hospital internship is now a prerequisite for licensure. Three other states will soon exact the same requirement, and other states are quite certain to follow their example. Eight medical colleges now require the intern year for graduation, and others are soon to do so.

The hospital internship is no longer for the privileged few, but will soon be required of every graduate in medicine. The real question now is, How shall this year of hospital service be controlled and administered? Shall it be left in charge of the hospitals; shall it be controlled by the licensing boards, or shall it be made an integral part of the medical curriculum by withholding the degree until its satisfactory completion, the faculty of the medical school being thus made responsible for its proper and efficient conduct? There seems to me to be no question that the last plan is the most advantageous for all interests concerned: for the students, the medical school, the hospital and the people whom these graduates are to serve as physicians.

It has been objected that most of the hospitals into which the graduates enter for intern service are not under the control of the medical college, and the faculty cannot, therefore, supervise the hospital work of its students in such a way as to insure its being worthy of credit on the course required for the degree.

The experience of the University of Minnesota and of Rush Medical College during the past year controverts that objection. But this very objection is one of the most forceful arguments for the general adoption of the plan.

THE MEDICAL SCHOOL AS A FACTOR IN THE IMPROVEMENT OF HOSPITALS

There is no greater desideratum in medicine in this country today than the general elevation of the standards of practice, both scientific and ethical, in hospitals.

In the important movement which has been initiated by the creation of the American Hospital Conference to survey hospitals of the United States and to encourage and assist them to improve their standards and methods of practice, no single factor is in position to be so helpful or to exercise more effective pressure than are the stronger medical schools. The hospitals must have interns, the medical schools alone can furnish them, and they are in position to say to the hospitals: "Unless you can furnish to our students proper facilities and conditions for effective work under proper supervision and advice by competent, willing members of your medical staff, we shall not permit our students to enter your service. We shall be glad to assist you in every way possible to make your hospital work most effective as an educational process for your interns, and thereby it will most surely be made the best possible for the patients within its walls, and the most satisfactory for your medical staff and administrative officers.

"Proper facilities and equipment for thorough scientific work must be provided; exhaustive thorough examination be made of every patient; accurate, comprehensive histories be written, laboratory findings in connection with his own patients must be done, at least in part, by the intern under the supervision of a competent pathologist; the intern must not be burdened with so many hours of intern work that he has not ample time for study and reflection in connection with his cases; and, most important of all, there must be a responsible medical staff including some men who are capable of directing and advising the intern and who are willing to give the necessary time and effort to do this."

If all of the hospitals in which our students serve internships were as good as the best, it would perhaps be less important that the intern year be made part of the curriculum and be brought under the supervision of the faculty of the medical schools. It is because they differ so widely in efficiency, and that the kind of training which the intern receives varies so much, that effort should be made to improve the poorer institutions. No class of men are so well qualified to do this as are those who are engaged in medical education—the faculties of the medical schools.

FEW LEGAL DIFFICULTIES

Are there any legal difficulties in the way of making this intern year a requirement for graduation? Inquiry has been made of the medical examining boards in the several states in regard to this matter. In all but a few of the states, the student who has completed four years of work in a medical school may serve as an intern without a license to practice. In a few states he may take the examination for licensure without possession of a diploma. In Illinois and Wisconsin, special provision is made by statute, whereby the student presenting a certificate that he has completed four years of study in a recognized medical school may take the examination for licensure, and if he passes this, receive a temporary license authorizing him to practice as an intern only. This temporary license is replaced by a permanent license, without further examination or fee, when he has completed a year of internship and has secured his diploma from the medical school. In four states, South Carolina, South Dakota, New Jersey and Washington, no license can be secured without the presentation of a diploma, and one may not practice as an intern without a license. This restriction certainly should be repealed, otherwise the hospitals in these states will be unable to secure the service of interns from the medical schools requiring the intern year for graduation.

CONTINUOUS, SINGLE SERVICE THE BEST

Another rule which should be modified is that laid down in some of the states in which the intern year is a prerequisite for licensure, demanding that the intern's service shall be of the mixed or of the rotating type. The growing tendency in the best hospitals is in the direction of a continuous service for a year in one department. When this change was made in the Presbyterian Hospital of Chicago, some ten years ago, I realized that it was inevitable because long continuity of service is unquestionably in the best interest of the patient and contributes greatly to the comfort and efficiency of the attending staff. I felt, however, that it was an unfortunate change for the intern. I have changed my mind. After observing the results of the plan since the change was made, I am convinced that it is very much better for the intern to confine his work to one department for a full year, or at the very least for nine months, rather than to go bobbing about from one service to another every few weeks. Only by remaining in one service long enough to become really efficient and well trained in that line does he secure the maximum pedagogic value from his hospital service. Of course, he ought, if possible, to follow a year of surgical service by six months or a year on the medical side; better still if the sequence is reversed, the medical work preceding the surgical. In hospitals when the number of patients is about equally divided between the medical, including pediatrics and neurologic cases, and the surgical cases including gynecology and the other surgical specialties, the ideal arrangement is for every intern to secure a year on the medical side, followed by a year in the surgical service.

LONGER HOSPITAL SERVICE FOR THE BEST MEN

Does a two year service seem too long? Even that is not sufficient to develop strong, thoroughly trained men to whom we may look for leaderhip in medicine in the next generation. The reason this country has developed few great masters in the medical as well as in the other sciences is that we have been unwilling to devote ourselves to the long years of patient, grinding tutelage, advancing slowly, under recognized masters, until we have laid broad and firm foundations. I look to see the time when those interns who have proved themselves most capable and promising will advance after two years of internship to a second and then a first assistantship, and finally to the position of resident physician or surgeon or obstetrician—of course on a gradually increasing salary—remaining in the service of the hospital for a period of from five to seven or eight years. Men so trained, under a strong, capable medical staff, will be in a class all by themselves in the medical profession of this country. It is by such a procedure as this that the masters in medicine of the European countries have been developed, and that is why American physicians went to Europe in such large numbers, previous to the great war, for advanced training and postgraduate instruction. Moreover, it is only by some such plan as this that the rapidly increasing demand for interns can be met. The present wide discrepancy between the annual numbers of graduates in medicine and the vacancies in internships, would be much greater than it is were each intern to be assigned only so many patients as he can care for efficiently; and the excess of the demand over the supply is certain to become greater in the next few years, for the hospitals in this country are multiplying rapidly, while the number of graduates in medicine is unlikely to increase at all for some years to come. If, therefore, this supply of available interns is to be no greater than it is now, the only solution seems to be a longer period of service from each one of those we have.

The response of the hospitals to the questionnaire as to their equipment, facilities, staff, etc., and to the request for cooperation in making the intern year of greater pedagogic value, has been very prompt and satisfactory. With few exceptions the hospital officials and members of the medical staffs seem quite as eager to improve the work of the hospital as are the college faculties to have them do so. The education of the intern is by no means the only function of the hospital, nor, indeed, its primary duty. Its first obligation is the care of the sick. As Dr. Warner[1] has ponted out, the modern hospital has come to be a complex institution with a number of purposes to fulfil. It must educate nurses, social service workers and hospital administrators. It ought, moreover, to provide for and to insist on research in clinical medicine. Fortunately, its many functions are not incompatible with one another, but are mutually helpful. Nothing is more certain to sustain and to advance the quality of its scientific work, and to conduce to the welfare of its patients, than is the participation by the staff in the education of its interns.

The extent of its equipment, and the number of salaries of full time or part time men on its staff, is limited by its financial resources; and very few hospitals are heavily endowed. The demands made on any hospital for improvement involving increased expenditure must be reasonable, for the sums available for such purpose are conditioned by the income of the hospital. The medical school can be helpful in advising hospital officials as to how they can best utilize the resources at their command. Few of our institutions are conducted more uneconomically and inefficiently than many of our hospitals. A hospital in which more than 50 per cent. of the annual income is expended for salaries of the administrative officers, and these are not few in number, is in need of services of an efficiency expert.

The cordial cooperation of the several national associations representing the interests involved in the present day hospital, through the medium of the American Hospital Conference, gives large promise of a nation-wide improvement in hospital practice that will render the demand of the fifth, or intern, year as a condition of graduation much less difficult of administration. When this demand becomes universal and every student is assured of a year of clinical work as an intern, it ought to arrest the tendency (quite manifest of late, and very much to be deprecated) to force back into the sophomore year courses in clinical medicine, surgery and obstetrics. The sciences fundamental to medicine, anatomy, physiology, et al., are of such great and growing importance that the student should devote every working moment of the first two years exclusively to them.

1. Warner, A. R.: Hospital Standardization, J. A. M. A. 72: 914 (March 29) 1919.

Dementia Praecox.—The rate of incidence of dementia praecox is higher in large cities as a class than in small ones, but the individual exceptions to the rule seem to indicate that the size of the city is not the dominant factor.—*State Hospital Quarterly*, Utica, N. Y., May. 1919.

PLEA FOR A STANDARDIZED COURSE OF INSTRUCTION *

THOMAS J. HARRIS, M.D. (NEW YORK)
Lieutenant-Colonel, M. C., U. S. Army; Director, School of Otolaryngology
CAMP GREENLEAF, FORT OGLETHORPE, GA.

At the annual meeting of the American Laryngological, Rhinological and Otological Society in 1912, the subject of medical education in its relation to the specialty of otolaryngology was one of the principal topics of discussion. It was the unanimous opinion that a reform was demanded, especially in graduate instruction, and a committee was appointed to consider the subject and present recommendations.

This committee, of which the chairman was Dr. D. J. Gibbs Wishart, presented a report the following year, which, among several recommendations, contained one to the effect that the other national societies covering this specialty be invited to appoint representatives to serve on a joint committee, whose business it should be further to consider the subject. The invitation was generally accepted, and a committee was appointed which held numerous meetings and three years ago presented the results of their deliberations in a report to the constituent societies. Considerable progress had been made toward the adoption of this report when the United States entered the war. This automatically stopped, for the time being, further action. It served, however, to supply the greatest object lesson possible for the vital necessity of this reform. This necessity, at an early period in the war, made itself apparent to those who had charge of this division of medical work in the Surgeon-General's Office. The result was the organization of the School of Otolaryngology at Camp Greenleaf, Georgia. This served to set forth in a way never before possible the true status of the specialty of otolaryngology in this country.

I desire, accordingly, to give briefly a history of the school and then to make certain observations based on our experience there.

ORGANIZATION

The School of Otolaryngology, Camp Greenleaf, was organized May 12, 1918, and the first class began its work on the eighteenth of the same month. On the first of these two dates, Lieut.-Col., then Major, Thomas J. Harris, M. C., reported under orders from the War Department as instructor in otolaryngology. A considerable number of student officers was awaiting instruction, and a class of sixteen was detailed to receive it.

It was part of a comprehensive scheme of postgraduate instruction for medical officers which owed its conception to the far-seeing mind of Gen. Edward L. Munson, M. C. The need of such training to render the medical man competent properly to do the work in the army which was to be required of him had already, before America entered the conflict, impressed itself on General Munson.

The full story of how it was put into execution at Fort Riley by Col. William Bispham, M. C.; at Fort Benjamin Harrison by Colonel Ashburn, M. C., and at Camp Greenleaf by Col. W. H. Page, M. C., of what has been accomplished by them, by their successors and by the officers working under them deserves to be, and undoubtedly will be, reported in full at the proper time. It is sufficient at this time to say that the accomplishments proved to be among the most important, so far as medicine is concerned, brought about by the great war.

BUILDING

A room in Ward Q of the general hospital was set aside as a lecture room, and equipment sufficient to permit of beginning work the following week was gathered together. The school was operated in connection with the ear, nose and throat department of General Hospital No. 14, and soon outgrew the quarters assigned to it. This led to the removal of the school, in July of the same year, to McDonald Field, where two buildings and half of a third building were assigned for its use.

The lower floor of one of these (Ward 29) was set aside for clinical and teaching purposes. It contained two treatment rooms, 31 by 10 feet, with concrete floors and electric lights; a well lighted operating room, 24 by 21 feet, with a concrete floor; a sterilizing room; a private treatment room for officers; a dispensary room; an office for the director, and a lecture room, 48 by 24 feet in size. All of these were conveniently connected, one with the other.

The three wards, together, contained 128 beds, most of which were constantly occupied.

EQUIPMENT

At the beginning, the equipment of the department was exceedingly meager; one nasal speculum and a tongue depressor virtually represented all that the staff had to work with. A requisition for a complete list of instruments and equipment was sent in early, and in due time everything that was needed in an up-to-date ear, nose and throat clinic, both for treatment and for teaching, was provided. The grateful thanks of the department are due to all the various purchasing officers of the Surgeon-General's Office. Without such equipment, it would have been impossible to do the work that was accomplished.

The operating room was fitted up with two operating tables and an operating chair, gas and oxygen outfit, an instrument cabinet, dressing cases, etc. The sterilizing room was provided with an electric sterilizing apparatus, capable of sterilizing all dressings and instruments for the department. Each treatment room contained four places for examination and treatment of patients, with a wash bowl at each place serving as a cuspidor, and electric connections for lights. At the end of each room there was a place for the assistant in charge of the clinic to work. Each room was provided with a modern suction apparatus. The private treatment room was also well equipped and contained a suction outfit. The lecture room was provided with blackboards and a Bárány turning chair.

The school was particularly fortunate in possessing an unusually valuable collection of cut sections of the head, lent by Lieut.-Col. Harris P. Mosher, M. C., and Lieut.-Col. William H. Haskin, M. C. In addition to these, there was a good supply of wet specimens of the head, a gift of Lieut.-Col. C. W. Richardson, M. C., a fine collection of lantern slides of the accessory sinuses, the gift of Col. Hanau W. Loeb, M. C., of St. Louis, and a collection of excellent slides of the ear, a gift of Dr. B. Alexander Randall of Philadelphia. Without these collections, satisfactory teaching would have been impossible.

* Read before the Section on Laryngology, Otology and Rhinology at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

CLINICAL MATERIAL

The clinical material was at all times abundant. At no time were there less than 1,200 patients, and there were often as many as 2,000 or 2,500 in the hospital. In addition to this, the various camps scattered throughout the park contained as many as 60,000 troops at times, and served as feeders.

THE STUDENT OFFICERS

Altogether, 110 student officers passed through the school. These were selected after careful examination by the director or his representative, and were only a portion of those who desired to take the course. On account of the limited time, it was impossible to admit beginners, only those showing evidence of real fitness being received; and these were not allowed to continue if they proved, after a short time, to be incompetent.

OUTLINE OF THE COURSE

The course was planned to run from four to six weeks, but from the fact that the War Department did not order the men away at the end of that time, it extended in many cases to eight and ten weeks. It was the endeavor to make the course as thorough as it could be made in the time allotted for it. It consisted of lectures and practical work, observation of operations, ward walks, and the performance of operations by the officer himself, as he showed his ability.

The lectures were given by the director of the department, by his assistants, and by the heads of other departments, including that of the School of Laboratories, School of X-Ray and School of Ophthalmology. Much attention was given to anatomy, which was taught with wet and dry specimens, lantern slides and on the cadaver. For practical work, the class was divided into small groups in charge of assistant instructors. Each student officer was provided with a head mirror and examining instruments, and required to make examinations and diagnoses himself. Each week, the subjects treated during the week were gone over in quiz by the director of the school. At the end of the course, a written examination was given, as well as a practical examination. The officers' ratings were based on the results of these two examinations.

A report of the ratings was sent each month to the Surgeon-General. Officers who had graduated satisfactorily from the school were assigned as assistants in the wards of the hospital. Those who showed themselves especially qualified were given temporary assignments as ward surgeons to the hospital, remaining in this capacity until they were ordered elsewhere by the War Department.

CONCLUSIONS

As already stated, the School of Otolaryngology was only a part of a comprehensive plan of graduate instruction for medical officers. Scarcely had this country entered on the war, before the pressing need of such instruction became evident to those in charge of the several training camps for medical officers. All those who had to do with these camps, in any capacity, were agreed that an unwarrantedly high rating had been placed on medical education in this country. So far as otolaryngology was concerned, this was driven home with increasingly painful consciousness the longer the war continued.

At Camp Greenleaf, a board of examiners representing the various branches of medicine and surgery met daily to examine every student officer immediately on his arrival. By this plan, every one representing himself as specially interested in any one of the specialties was assigned for examination by the director of the particular school. In this way, opportunity was given to ascertain the qualifications of several hundred men drawn from all parts of the country who claimed to be otolaryngologists or to have had more or less training in that specialty. The results of these examinations were as astonishing as they were disappointing. Whether the applicants for admission to the school had practiced the specialty for a few years or many, all, with comparatively few exceptions, showed a woful lack of knowledge of its fundamentals. With increasing emphasis as the weeks went by, the need of adequate and thorough graduate education truly to fit men for such work forced itself on those to whom the duty of making such examinations was assigned. Inquiry shows that out of the entire number who presented themselves, very few had had little more than a six weeks' course of graduate instruction. The all-important subject of anatomy was a closed book to them. With such a thing as the physiology of the nose, throat and ear, few had any acquaintance. Pathology, bacteriology and neurosurgery did not enter their field of knowledge. For most of them, the broad field of otolaryngology, with its intricate sidepaths, meant only the ability to remove tonsils and straighten septums.

This alarming lack of qualifications on the part of the average otolaryngologist, practicing in the cities and towns of this country, as demonstrated by the results of these examinations, served but to drive home with greater emphasis the need of comprehensive and adequate graduate instruction in otolaryngology. So long as the six weeks' course is given to any and all who are prepared to pay the prescribed tuition, apart from whether proper qualifications are possessed or not, so long will our country continue to be at the mercy of ill trained and uneducated specialists.

The deductions from the experience gained in our work at Camp Greenleaf may be summarized under three heads:

1. The desirability of admitting to a course like the one just outlined, only men properly qualified. Much of the failure of the various postgraduate schools, as now constituted, has arisen from the custom of admitting to the various courses all who were in a position to pay the prescribed fee. So long as a teaching institution is dependent for existence on the fees of the students, so long will this error exist. The majority of the student officers who took the course had already taken courses in postgraduate schools and regarded themselves competent to perform the more common operations on the nose and throat, but were found entirely lacking otherwise.

2. The importance of a graded course of instruction in both theoretical and practical work. In too many cases the student is in the habit of selecting what appeals to him and passing over anything else. The specialty of otolaryngology is so broad that the well trained specialist cannot afford to be ignorant of a single phase of it.

3. The value of full-time instruction. Instead of a hurried hour twice a week, the result of the exigencies of private practice, the instructor should give his undivided time from morning to night to the interest of the students. No greater need exists today in undergraduate or postgraduate medical teaching than that of full-time instruction. This can be secured only by releas-

ing the teacher from the requirements of private practice by giving him an adequate salary.

We cannot too earnestly and emphatically urge the need of a reform in our present methods of instruction. Never was the time so ripe for actively pushing a properly worked out program of graduate education. Such a program has been presented to this section by the committee having the matter in charge. It contains three all-important recommendations:

1. There should be a standardized curriculum extending over a period of at least two years, to be given at Class A universities or colleges.

The details of this curriculum have been carefully worked out. A consideration of it is not in order on this occasion, further than to say that it calls for both didactic and clinical instruction, the former to include a thorough training in the basic subjects, such as anatomy, physiology and pathology, covering a period of six months, to be followed by residence in some special hospital as intern.

2. The student should pass a comprehensive examination on the completion of the course.

3. A special degree ought to be conferred by the university or college. As a preliminary to this special instruction, the student shall have engaged in general practice for at least four years.

No graduate school dependent on fees of the student for support is in a position to carry out the curriculum proposed. The postgraduate school, as now constituted, has a distinct and extremely important function, that of affording opportunity for the graduate in medicine to "brush up" and acquaint himself with the most up-to-date methods and procedures. It is not suitably endowed to give the systematic instruction which we are outlining now. For this, proper endowment or affiliation with an adequately endowed or properly supported university is essential, in order that no consideration of financial return will affect the carrying out to the letter of the curriculum decided on. Such a graduate school should have means to put into operation what is now generally recognized as the sine qua non of any proper clinical teaching, that is, paid, full-time instruction. It is necessary only to mention it to condemn the present method of one hour of clinical teaching three times a week, the inevitable result of the demands of private practice, on which the teacher must rely for a living. Only the unsuccessful practitioner or he who is blessed with a private income can possibly be depended on to give a sufficient amount of time to clinical teaching to secure the results desired.

If the Committee on the Teaching of Otolaryngology can have your support, and that of the other national societies, it is their earnest hope and expectation that within a few years a marked change for the better will be witnessed in the qualifications of those who enter this specialty. This section can do much in advancing the reform. It is violating no confidence to say that up to the present time the medical schools of the country have not been overenthusiastic in offering their support. Harvard, alone, under the leadership of Professor Crockett, has taken definite steps in conformity with these plans of education. A similar forward movement by the leading universities of the country is essential to the success of the movement. This can be brought about only by the active and vigorous backing of the members of this influential body of otolaryngologists, and this support on behalf of the committee we earnestly solicit at the present time.

ABSTRACT OF DISCUSSION

Dr. John G. Bowman, Chicago: Dr. Harris' paper is a keen analysis both of the need of specialization in otolaryngology and of the way to meet that need. Dr. Harris seems clearly to have in mind the chief principle which makes for specialization. That principle is the necessity of leadership. Out of 1,000 men, let us say, in otolaryngology there are ten who see exactly what the specialty means in relation to the science and the practice of medicine; and these men see also the practical steps by which specialization may wisely develop. Dr. Harris is one of the ten. The business of the ten is not only to state clearly the ideal to be attained. Their business is also to state with quite as much definiteness the first step and second step, and possibly the third step, which lead directly toward the ideal. We all have too much experience in problems of the kind before us to believe that we can attain the ideal merely from a mood of enthusiasm or from expressions of hope. The problems before us are two in number: First, what can be done to encourage higher specialization in otolaryngology among the men now practicing otolaryngology? Second, what can be done in the medical school to encourage and to bring about the requisite specialization in otolaryngology before the medical graduates go into independent practice? Both these questions need serious consideration. Answering the first question, it seems to me that careful and regular review on the part of otolaryngologists of their own successes and failures is the first essential. In other words, the otolaryngologists, let us say, should check up their own work at least once in each thirty days and analyze for themselves wherein they have succeeded and wherein they have failed. Such analyses will require, obviously, the keeping of careful case records and the use of clinical laboratories. Answering the second question, we must analyze the scientific attainments required in the practice of otolaryngology and then bring these attainments to the medical school curriculum. When you, the leaders in your specialty, become really determined to add, let us say, one year of special graduate work to the medical curriculum for the training of those who elect otolaryngology, you will win the cooperation of the medical schools. But you must be determined, for a half hearted effort, as things stand now, will scarcely receive a hearing among the medical schools.

Dr. H. P. Mosher, Boston: Dr. Harris' paper is definite and complete. Dr. Bowman gives us some practical help and puts some of Dr. Harris' recommendations into concrete form. Between the two we have had this subject covered very completely. I would, however, like to soften one point brought out by Dr. Harris. The figures quoted by Colonel Munson will go around the country from paper to paper, from society to society. They are correct, but I think they should be softened. I have not until now been soft in speech in regard to the war, but really I do not think that these figures should go just as they stand. In order to explain why I am softening, I will tell you how the men were picked. The men as they came in who were known to the Surgeon-General's Office, the older men of the different specialties, were at once sent to the base hospitals and if possible put in charge. The younger men were also sent, preference being given to the men who came from recognized special hospitals. These two classes did not give enough men and then the question arose how to train men, and it ended by sending a double staff to the base hospitals, because it was hoped that the first staff would soon go abroad and the second staff would take their place. Then we were told that we could not send any more men over. About this time the schools were opened and we began to send men to the schools, and by that time we had only the poorer men left. Now be a little considerate when you quote these figures. The figures are true, but use them as kindly as you can.

Dr. D. J. Gibbs Wishart, Toronto, Canada: I cannot add much to what has already been said by Dr. Harris, but I want to make one point, and that is, that we will only get anywhere by the height of the ideal we have before us, and if as a profession in this country we desire to turn out men, to have men practicing who are a credit to the profession, we must have a high ideal of the great breadth of laryngology and what it stands for. Each one of us, in our own particular

sphere of action, by having such an ideal set before us, will do a great deal through our influence in our local society and in the communities with which we are connected and with the public generally in placing before these different bodies these ideals, and I want to emphasize the necessity of having these ideals as high as possible. To the fathers of laryngology in this country who went abroad and studied many years, we owe a great deal, but now we have coming a large number of men who have not been abroad and who are trying to enter the profession in order that they may derive certain benefits they think accrue to those who practice the specialties; but they are not aware, because we have failed to show them, of the demands to be made on them in practicing the specialties, and I would ask that you carry away with you from this meeting the determination that so far as you can do it in your own sphere you will help to raise these ideals and to show to your weaker brethren that there is something more in otolaryngology than simply the removal of tonsils or the resection of a septum.

Dr. C. G. Coakley, New York: I think the fault is with the organization of our teaching, not only here but abroad. There is no place abroad, there is no place in this country, where a man can get the instruction as outlined by Dr. Harris; that is, the preliminary study by which he will be grounded in the whole work, in anatomy and physiology, for, say, six months before he goes into his special hospital. The able men who are turned out in this country adequately equipped are the young men who have been fortunate enough to have a service in a special hospital devoted to otolaryngology, whether in service one year or sixteen months or two years. These men come out practically equipped, they are good operators, but many times they lack that preliminary training, that thorough grounding in anatomy which is so necessary to enable them to do the kind of work which ought to be done by the 990 men instead of the ten. It ought to be comparatively easy to establish a six months' training course in several of our universities. It will need but little additional capital and endowment; it will not need full-time men of the very highest rank in the profession. The younger men who have recently completed their hospital training are the practical men. They will have several hours a day while they are accumulating their practice to devote to this type of work and would be very glad of the comparatively small remuneration necessary to enable them to do that work. These are the practical men to do it and the leaders can supervise the work. Establish such a six months' course in two or three cities and you will advance to a much higher plane in this country than anything that has existed here or elsewhere.

Dr. Joseph C. Beck, Chicago: After my medical service terminated in Europe I thought, as Dr. Bowman said this morning, now is the time to do something along the line of future education, of development in special work. We know how many men would go abroad every year to get their education, and we well remember that we were informed very early in the war, when the Germans were ahead, that after this war the various clinics in Austria and Germany, Vienna and Berlin, would be closed to America. It was my idea to find a substitute or an improvement, for I believe it can be an improvement, along these lines of clinics and courses. I set to work in the country I was in at that time —Prague—to find out what they thought about it, and found the clinical profession anxious to do all they could. I was told we could organize a clinic such as they had in Vienna, and succeeded in doing so. I was then given permission by the Czecho-Slovak government to travel through the allied countries and see what was being done, and if possible organize an interallied clinic. I went to Rome, Italy, and found the same cordial reception and courtesy on the part of the clinical professors, who were anxious to do what they could. I succeeded in organizing a clinic there. I went to France, but found the work had already been put under way by Colonel Lloyd of New York, who had organized a school for military men as a forerunner to courses in civil practice. In London I found still greater advances made. I found that Sir St. Clair Thomson, Sir Arbuthnot Lane and Sir William Osler had been working on this matter, having a school in which they were teaching men in various branches. Coming home, I naturally reported to my own school, the University of Illinois, and presented the subject to them. My plan being a university proposition, I asked for a meeting of our faculty, presented the subject to them and they endorsed my proposition. Since I have been in Atlantic City I received a letter from a Dr. Franklin of London who informs me that an Anglo-Czecho-Slovakian committee is being considered to further the interests of our specialty in the Balkan countries and at the contemplated University of Prague.

Sir St. Clair Thomson, London, England: England is slowly waking up now that the war is over; we have one eye open and the other is slowly opening, and we owe this to America and Americans. Sir Arbuthnot Lane, Sir James McKenzie and Dr. Bruce of Toronto came back from their visit to America last summer so impressed with their reception and what had been told them that it was only at the end of July we called a hurried meeting to consider what we could do. They brought us the message that Americans were willing to come to London if we could "deliver the goods," and that it was up to us to try to take the place of Vienna and Berlin as the Mecca for the student of medicine. The only good thing I have done in the matter is to design the title. At Christmas we realized that large numbers of American military officers were being demobilized and passing through London, some of them flocking to Oxford and Cambridge and Edinburgh, so we had to get to work in a hurry and establish what we called an emergency postgraduate course. We also have the building of a real postgraduate hospital for which the money is forthcoming. There is also a rumor that wealthy men from this side will build an American hospital in London, where the poorest traveler may go, and also, what we have nothing to equal on our side, a private hospital with what we call paying wards. What we all need is reciprocity, but the greatest good on earth will be to make the Englishman lose his insularity and to get our students to come over here and study in your hospitals and universities, to show the Englishman, of whom I am the *avant courier*, that there is a body so distinguished, so large and so hospitable as the American Medical Association.

SPECIAL POINTS IN ABDOMINAL SURGERY

EMPHASIZED BY MILITARY EXPERIENCE *

GEORGE W. CRILE, M.D.
CLEVELAND

The experience in abdominal surgery in the great war may be discussed under the following headings: (*a*) comparison between the intestine of the average soldier and of the average civilian; (*b*) the factor of exhaustion—the effect of cold and wet; (*c*) the time factor; (*d*) the comparative effects of lesions of the solid and of the hollow viscera; (*e*) combined thoracic and abdominal wounds; (*f*) the phenomena and treatment of internal hemorrhage; (*g*) the prevention and treatment of shock, before, during and after operation; (*h*) the anesthetic factor; (*i*) the incidence of bronchopneumonia after abdominal operations; (*j*) retroperitoneal infections; (*k*) the treatment of peritonitis; (*l*) operative technic, and (*m*) comparison with civilian abdominal surgery.

COMPARISON BETWEEN THE INTESTINE OF THE AVERAGE SOLDIER AND OF THE AVERAGE CIVILIAN

Soldiers whose general condition had not been too greatly impaired by exhaustion from fighting, by wet

* Read before the Section on Surgery, General and Abdominal, at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

and cold, or by shock or hemorrhage showed a resistance to infection rarely seen in civilian surgery. I observed apparently as marked an increase in the firmness and the thickness of the muscles of the intestine of the average soldier as compared with the average civilian patient, as the leg or arm muscles of the soldier were larger and firmer than those of the civilian.

EFFECT OF EXHAUSTION AND OF COLD AND WET

Soldiers wounded after a protracted season at the front, especially if cold and wet, as was almost universally the case during the winter months, with their general resistance lowered by bodily fatigue and mental stress, bore penetrating abdominal wounds badly.

THE TIME FACTOR

The length of time between the receipt of the wound and arrival at a hospital was a vital factor. After the tenth hour the prognosis became progressively worse until the twentieth hour, when, as a rule, the established infection made operative measures inadvisable.

COMPARATIVE EFFECTS OF LESIONS OF THE SOLID AND OF THE HOLLOW VISCERA

Lesions of the liver and spleen were far less grave than lesions of the hollow viscera. Generally speaking, surgical intervention was not indicated for lesions of the liver or of the spleen, excepting for the control of hemorrhage. For the control of progressive hemorrhage from the liver, gauze packing proved preferable to attempts to suture. Badly shattered spleens were best excised.

Lesions of the large intestine resulted in a higher mortality than lesions of the small intestine. In cases of gunshot wounds of the small intestine, it was surprising to find to what an extent, in many cases, leakage was controlled by the contraction of the muscular wall. As to mortality, lesions of the stomach were comparable to those of the small intestine.

COMBINED THORACIC AND ABDOMINAL WOUNDS

Combined thoracic and abdominal wounds were especially grave. The practical point is that the thoracic approach is usually better than the abdominal approach, provided there are no perforations lower than the stomach as indicated by the entrance and the exit points.

OUTSTANDING PHENOMENA OF INTERNAL HEMORRHAGE

The two outstanding phenomena of internal hemorrhage were a mounting leukocytosis and a falling temperature; the treatment employed included operation, morphin and blood transfusion, the giving of fluids, and keeping the patient warm.

PREVENTION AND TREATMENT OF SHOCK AND THE ANESTHETIC FACTOR

The best treatment for hemorrhage and shock is heat and rest, fluids, morphin, and blood transfusion. Among the conclusions adopted by the Interallied Surgical Congress, acting as a sort of supreme court of surgery, were the following:

1. The anesthetic of choice is nitrous oxid-oxygen.
2. "For abdominal cases and for patients suffering from shock, local anesthesia may be employed in conjunction with the administration of nitrous oxid and oxygen."

Among the evidence offered in support of these conclusions, Major-Gen. Sir Anthony Bowlby presented the work of one of the most brilliant British military surgeons, Capt. Douglas C. Taylor, and the work of the chief of the anesthetic service of the British army, Capt. Gregory Marshall. The following statement by Captain Taylor I am privileged to quote:

> Until the summer of 1917, my colleague, Capt. G. Marshall, invariably gave ether for my laparotomies for gunshot wounds of the abdomen. No series of 100 consecutive cases showed a recovery rate of much over 50 per cent.
>
> During the summer and autumn of 1917 I did 101 laparotomies for abdominal wounds, and nearly half of them were given nitrous oxid and oxygen, combined with infiltration of the abdominal wall with eucain and procain. The more serious cases, i. e., those with rapid pulse and low pressure, were nearly all done by this method.
>
> Of this series, twenty-seven died at the casualty clearing station, and seventy-four were evacuted to the base. Of the latter there have been only two deaths, both from secondary hemorrhage, one from the kidney and the other from the rectum and the buttock.

That is, by the employment of anociation, Dr. Taylor's mortality rate was reduced from approximately 50 per cent. to 29 per cent. So far as I am aware, this is the best record of the war.

Captain Marshall, in turn, has demonstrated that patients may apparently do well during ether anesthesia but do badly afterward, while they do well both during and after nitrous oxid-oxygen anesthesia.

The experience on a large scale of the resuscitation teams from the Lakeside Unit, which served continuously throughout Field Marshal Haig's great offensives in Flanders in 1917, showed that in abdominal operations somewhat better results were obtained if, before the beginning of the operation, sufficient blood were transfused to permit a safe performance of the operation; and if, again, at the completion of the operation, an ample amount of blood, up to 750 c.c., were given. Furthermore, if a let-down appeared later, the transfusion might be repeated. Meanwhile, the advantages of comfort, rest, warmth, morphin and fluids were added.

INCIDENCE OF BRONCHOPNEUMONIA

In abdominal surgery, the general experience was that, during the winter months, there were more deaths from bronchopneumonia than from peritonitis. In certain winter campaigns, on account of the fatigue of the troops from heavy front line duty, from cold and wet and difficult surroundings, the incidence of bronchopneumonia was so high that operations were temporarily suspended.

RETROPERITONEAL INFECTION

In military, as in civilian surgery, retroperitoneal infections carried a higher mortality than intraperitoneal infections.

TREATMENT OF PERITONITIS

Military experience also emphasized the essential points in the treatment of abdominal infection established by civilian experience, namely: (1) nitrous oxid-oxygen as the anesthetic of choice; (2) anesthetized incision; (3) accurate, clean-cut operation to diminish both infection and shock; (4) adequate drainage; (5) Fowler's position; (6) vast hot packs over the entire abdomen, spreading well down over the sides; (7) 5 per cent. sodium bicarbonate, with 5 per cent. glucose by rectal tap, continued as long as it is tolerated; (8) primary lavage of the stomach, repeated only if indicated; (9) from 2,500 to 3,000 c.c. of physiologic sodium chlorid solution administered subcutaneously every twenty-four hours until the period of danger is

past; (10) in grave, acute peritonitis, morphin given hypodermically until the respiratory rate is reduced from 10 to 14 per minute and held to this rate until danger is past.

The technic that will deal successfully with the exhausted, infected soldier with a perforation of the intestine will be of equal value to the exhausted civilian patient.

Certain points in technic in contradistinction to general management may be mentioned:

1. Assuming good technic, as compared with a rapid operator a slow surgeon has a high mortality. 2. Sutures are easily tied too tightly. 3. No drainage is required in operations on the small intestine. In operations on the large intestine, drainage may be used, but never in contact with the line of suture. 5. Retroperitoneal infected wounds should be treated by the Carrel method. 5. The abdominal wall may be divided in any direction with impunity. 6. In great emergencies, a temporizing fistula may be made by marsupializing a hopelessly damaged coil. 7. Although not every penetrated abdomen holds perforated viscera, every perforated abdomen should be opened. 8. I have seen patients whose abdominal wall had been torn wide open, and whose intestine was cold, covered with mud, and perforated withal, get well under the management outlined.

CONCLUSION

The principal experiences on which the foregoing summary is based were with the British in Flanders in 1917, and with the American forces in the Argonne in 1918. The outstanding conclusion from this experience is that the general principles which govern the successful handling of the problems of abdominal surgery are the same in military and in civilian practice. A good abdominal surgeon in military surgery will be a good abdominal surgeon in civilian surgery, and vice versa.

VALUE OF CONVALESCENT BLOOD AND SERUM IN TREATMENT OF INFLUENZAL PNEUMONIA*

HENRY F. STOLL, M.D.
HARTFORD, CONN.

The futility of the usual forms of treatment during the epidemic of influenzal pneumonia was early manifest. With a fatality much greater than our common pneumonia, it suggested the pandemics of old when "the pestilence stalked at noon day through the city, and the doomed inhabitants fell like grass beneath its scythe."

Though the causal agent was undetermined, it seemed that the serum of convalescents might possibly contain antibodies in sufficient quantities to influence favorably the course of the disease.

Serum from patients convalescent from scarlet fever was found by Huber and Blumenthal, Von Leyden[1] and others to be of some therapeutic value in that disease, and both experimentally and in human beings the serum of poliomyelitis convalescents is beneficial if used early.[2]

Richardson and Connor[3] recently demonstrated that the serum of patients convalescent from measles conferred a certain amount of immunity.

We did not know at this time that convalescent serum had been used at the naval hospital at Chelsea, Mass., and just as we were starting the treatment, McGuire and Redden[4] published their results.

Our cases were too few in number to determine fully the value of this form of therapy, and the occurrence of a slight epidemic of hemolytic streptococcus cases early in 1919 increased the difficulty of interpreting our results. Yet certain observations were made that may be of interest and from them certain conclusions seem warranted.

Fifty-six patients received injections of convalescent serum, convalescent blood, or both. One other patient had several treatments, but is excluded because he had a large empyema when treatment was instituted.

Since we at first did not have enough serum for all cases, and as the mild ones usually resulted in recovery without any special treatment, we thought the best test would be to treat only those patients who were seriously ill. As will appear, some exceptions to this rule were made.

According to their condition when treatment was instituted, the cases were divided into four groups. This grouping is only approximately correct, as prognosis, at all times difficult, is especially so in an unfamiliar and very fatal malady.

Group A, 10 per cent. of the cases. Very favorable; mildly toxic; small area of pneumonia; no cyanosis nor vomiting; urine negative.

Group B, 19 per cent. Toxic symptoms more marked; pneumonia more extensive; mind clear; little or no cyanosis; seriously ill but recovery probable.

Group C, 30 per cent. Seriously ill; prognosis poor but patient not moribund, beginning gray cyanosis; often delirium; usually albumin and casts in the urine; as a rule, several lobes extensively involved.

Group D, 41 per cent. Very seriously ill; cyanosis, as a rule, marked; usually delirium or stupor; extensive lung involvement, with a rising temperature, pulse and respiration.

In primary pneumonia the respiratory rate in general gives a good index of the seriousness of the infection. In influenzal pneumonia the patient may be very toxic and have a poor prognosis, but with respirations only slightly increased.

In a group of patients selected because of their serious condition, the mortality rate to be significant should be compared with a like number of equally sick untreated patients. So overwhelming was the epidemic that this could not be done. The mortality in 435 cases of pneumonia, including those patients treated with convalescent serum, was 52 per cent.[5] The mortality of the serum-treated patients was approximately 45 per cent, but the prognosis was distinctly bad in over 70 per cent. when treatment was instituted. Twelve of the fatal cases were in Group D, three in

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* From the Walter Reed General Hospital.

* This paper and that of Dr. J. B. Herrick which follows are part of a symposium on "Influenza." The previous papers appeared in the issues of THE JOURNAL for August 2 and 9.

* Because of lack of space, this article is abbreviated in THE JOURNAL by the omission of the case reports. The complete article appears in the Transactions of the sections and in the author's reprints.

* Read before the joint meeting of the Section on Pharmacology and Therapeutics, the Section on Pathology and Physiology and the Section on Preventive Medicine and Public Health at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

1. Kolmer, J. W.: A Practical Text-Book of Infection, Immunity and Specific Therapy, Philadelphia, W. B. Saunders Company, 1915.

2. Amoss and Chesney: J. Exper. M. **25**: 581 (April) 1917.

3. Richardson, D. L., and Connor, Hilary: Immunization Against Measles, J. A. M. A. **72**: 1046 (April 12) 1919.

4. McGuire, L. W., and Redden, W. R.: Treatment of Influenza Pneumonia by the Use of Convalescent Human Serum, J. A. M. A. **71**: 1311 (Oct. 19) 1918.

5. Fell, E. W.: Postinfluenzal Psychoses, J. A. M. A. **72**: 1658 (June 7) 1919.

Group C, and in only one, a pregnant woman, did the prognosis seem fairly good. She aborted; the temperature reached normal, but death ensued (Case 8).

Of the favorable cases (Groups A and B) the mortality was less than 25 per cent.

In a few cases which ended in recovery following the use of convalescent blood or serum, it did not seem that the outcome was in any way influenced by the treatment. We accordingly have listed these as unimproved in the classification appearing below.

There was a difference of opinion among the medical officers at the hospital as to the merits of the treatment. Lieut. A. D. Rood,[6] in charge of the general pneumonia ward, considered it to be without value. Capt. Sothorne Key, the ward surgeon of the officers' ward, thought highly of it. Major Randolph, chief of the medical service, felt that in some cases it was of real value. As the medical officer who was directing this investigation, I appreciated the fact that the favorable results obtained in the officers' ward were not duplicated in the general ward. The reason for the difference, however, was not apparent until the two groups were studied separately.

The accompanying table shows that in 80 per cent. of the patients in the general pneumonia ward the prognosis was poor at the time the serum was administered, and 60 per cent. seemed quite hopeless. In the officers' ward, on the other hand, the prognosis was unfavorable in 62 per cent. and utterly bad in only 22 per cent. The enlisted men had had their pneumonia 5.4 days when treatment was started, while the patients in the officers' ward had been ill only 3.9 days.

Lamb and Brannin,[7] in studying the epidemic at Camp Cody, found that death occurred, on an average, at the end of 4.9 days after the onset of the pneumonia.

In the officers' ward, notwithstanding the fact that in 62 per cent. of the cases the prognosis was unfavorable, 72 per cent. of the patients showed definite improvement, while in the general ward only 17 per cent. were benefited.

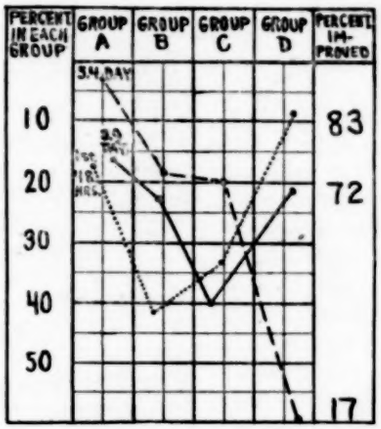

Chart 1.—Importance of early treatment: Groups A, B, C and D refer to the patients' condition when treated, A being most favorable, D least so. The first column shows the percentage in each group. Broken line, patients ill 5.4 days when treated; 60 per cent. in Group D, of whom 17 per cent. only improved. Solid line, patients ill 3.9 days; only 22 per cent. in Group D, while 72 per cent. were benefited by treatment. Dotted line, twelve patients ill not over two days; 8 per cent. were in Group D, and 83 per cent. showed definite improvement.

RESULTS OF TREATMENT IN TWO GROUPS OF CASES, AND THE DETERMINING FACTORS

	Number of Cases	Condition When Treated*—A Per Cent.	B Per Cent.	C Per Cent.	D Per Cent.	Day of Disease	Definite Improvement Per Cent.
Officers and Stat. Off.	32	16	22	40	22	3.9	72
Pvts. and N.C.O..	24	4	16	20	60	5.4	17

* A, B, C and D refer to the prognosis, A being very favorable, B, C and D increasingly bad.

All patients admitted to the wards for officers immediately came under the ward surgeon who was to have charge of them, and serum was frequently given within a few hours after admittance. All cases going to the general medical wards first went to the receiving ward where after a careful examination and short period of observation they were sent to their proper destination. This was deemed necessary to detect the contagious diseases and to avoid filling up the pneumonia ward with various other acute respiratory diseases. But a disadvantage existed in that the pneumonia patients often did not arrive in the pneumonia ward till from twelve to twenty-six hours after admittance. When the cause of the difference in the results in the two wards became apparent, treatments were given in the receiving ward; but by this time the epidemic had nearly subsided.

It is noteworthy that all who have written on the treatment of influenzal pneumonia, irrespective of the agent used, state that good results are obtained only when treatment is given early; that is, within the first two or three days of the disease.

In twelve of our cases, treatment was given within forty-eight hours after the appearance of the pneumonia. One patient had a beginning empyema when treated. Of the eleven remaining, all except one (90 per cent.) recovered. The fatal case was a hemolytic streptococcus infection.

McGuire and Redden[8] had an exceptional opportunity to observe the effect of convalescent serum in a small but virulent epidemic of influenza that developed among the officers and crew of the *Yacona*. Twenty cases of bronchopneumonia developed in eighty patients with influenza. All were promptly treated with serum, and all except one recovered.

In the first cases treated we used the serum obtained after allowing the blood to clot. Later we adopted the suggestion of Hartman[9] and collected blood in sodium citrate solution. The serum thus obtained is plasma, but, for the sake of simplicity, is called by the more common name. Twenty-eight patients, in 59 per cent. of whom the prognosis was unfavorable, received a total of forty-nine injections of serum, and definite improvement resulted in half. Five of this group who did not improve developed a hemolytic streptococcus infection. One died from a pneumococcus Type IV meningitis.

In ten cases, seventeen injections of citrated blood of pneumonia convalescents were given. Six patients received only one injection, three received two each, and one was given five. In eight of the ten patients the prognosis was poor, in two utterly hopeless. The two last mentioned died, but five of the other six who were seriously ill definitely improved. The only patient not seriously ill who did not improve developed an empyema.

In eighteen cases at least one injection of convalescent blood and one of convalescent serum were given. The fact that all required more than one treatment

6. Rood, A. D.: New York M. J. **109:** 493 (March 22) 1919.
7. Lamb, F. H., and Brannin, E. B.: The Epidemic Respiratory Infection at Camp Cody, N. M., J. A. M. A. **72:** 1056 (April 12) 1919.
8. McGuire, L. W., and Redden, W. R.: Treatment of Influenzal Pneumonia by the Use of Convalescent Human Serum, J. A. M. A. **72:** 709 (March 8) 1919.
9. Hartman, F. W.: New Methods for Blood Transfusion and Serum Therapy, J. A. M. A. **71:** 1658 (Nov. 16) 1918.

would indicate that they constituted a more unfavorable group than the other two. The prognosis was bad in 83 per cent., and only 39 per cent. showed improvement.

The number of injections required to obtain the desired result is of interest. The chance of recovery is inversely proportionate to the number of treatments required. Of twenty-seven patients in whom marked improvement was noted, fourteen required only one treatment, five received two (the second injection was probably unnecessary in two cases), and five required three treatments. Only one patient received four treatments who was benefited, and two who received as many as five showed improvement. The last two had been ill a long time and received small amounts of serum. Had larger amounts been used, it is possible that fewer treatments would have been required.

McGuire and Redden[8] used only one injection in one third of their cases, and of the remainder, two thirds needed only two. We used from 100 to 150 c.c. of serum; from 300 to 400 c.c. of whole blood was usually used, though in a few of our earlier cases amounts of less than 100 c.c. were employed. One of our most striking cases was in this group (Case 1). When blood was used, donor and recipient were always typed for agglutinins. This is not necessary with serum. Pooled serum was used in about one half the cases. We obtained the blood when the temperature had been normal about ten days, depending on how seriously ill the patient had been. Officers, their wives and nurses, gave their blood as willingly as did the patients in the general ward.

EFFECT OF CONVALESCENT SERUM ON THE SYMPTOMS AND COURSE OF THE DISEASE

Conscious patients in whom the influenza symptoms were marked, experienced relief, almost without exception, in a few hours. Headache and malaise would cease and a number of times severe vomiting of several days' duration promptly stopped (Cases 2 and 20). The detoxication was quite a definite thing. I talked with many officers and nurses during convalescence, and with hardly an exception they said they "felt entirely different" after the treatment. Cyanosis when not extreme would show improvement within twenty-four hours (Cases 3 and 4). One intensely jaundiced patient showed a remarkable clearing up of his jaundice within forty-eight hours after his treatment (Case 5).

The slight clouding of the sensorium frequently present was usually dissipated, but only occasionally did the patients who were delirious show a prompt clearing of consciousness. The rule was for the temperature, pulse and respiration to begin to fall, reaching normal in from thirty-six to forty-eight hours, depending on whether there was a chill. No change would be noted in the mental picture until from twenty-four to thirty-six hours later.

No improvement took place in the mental condition of one patient who had a complicating empyema and was much disoriented for weeks, though he received six treatments. He ultimately recovered. Ross and Hund,[10] using convalescent citrated blood, found that the temperature reached normal 1.5 days after the treatment and 9.5 days after the outset of the disease, while, with the untreated patients, the temperature did not become normal till the fifteenth day.

It was the rule that no extension of the pneumonic process took place after improvement in the symptoms occurred. A similar observation was made by McGuire and Redden. In a few cases, however, after a slight though definite improvement, a rapid extension followed with a fatal termination as a rule. One officer who showed such an extension into the only uninvolved lobe again showed prompt improvement and recovered when another treatment was given (Case 6).

Cowie and Beaven,[11] as a rule, found an increase in the signs following the use of typhoid vaccine.

The physical signs often would show no improvement until several days after the temperature, pulse and respiration had reached normal and all symptoms had subsided. In fact, the roentgenologist not infrequently would consider the patient still very critically ill, or even progressing, from a study of the daily negatives, when clinically he was quite convalescent.

After seeing the lungs at postmortem, it is difficult to understand how organs exhibiting so little normal tissue can continue to function, and it is even more remarkable that recovery sometimes takes place.

REACTIONS

Transfusions of normal citrated blood for various conditions are followed by a chill in about 20 per cent. of the cases.[12]

A reaction took place in twenty-three (16 per cent.) of our series of 140 intravenous injections. It is quite possible that a few patients may have had a slight reaction that escaped notice. The reaction was such as is seen following the injections of various foreign proteins. Within half an hour the patients feel chilly, and then have a shaking, followed by an elevation of temperature. In only one instance did the temperature go very high, and then 107 was recorded. As a rule, the temperature rapidly fell, reaching normal in about twelve hours.

Reactions occurred with about equal frequency with whole blood and with serum.

O'Malley and Hartman,[13] using plasma, report a "response," usually a chill and sweat, in 75 per cent. of their cases, and the improvement was more prompt when the reaction took place.

RESULTS OF REACTION

In the great majority of instances, coincident with the fall in the temperature following the chill, the pulse and respiration dropped and there was marked clinical improvement. This took place with such regularity that we considered a chill a good omen. But in the case of four patients, all very ill, the reaction may have hastened their death (Case 7). It seems possible that the severe reaction in Case 3, reported by Cowie and Beaven,[11] following an injection of typhoid antigen, may have hastened the fatal outcome, though they do not suggest this possibility. A severe reaction in a very sick patient is not to be regarded lightly. It may save his life, and it may hasten his death.

In the case of two of our patients who were treated at the same time, with serum a week old, marked flushing of the face accompanied the reaction (Cases 7 and 8). The serum was perfectly clear and sterile and free

10. Ross, C. W., and Hund, E. J.: Treatment of the Pneumonic Disturbances Complicating Influenza, J. A. M. A. **72**: 640 (March 1) 1919.

11. Cowie, D. M., and Beaven, P. W.: Nonspecific Protein Therapy in Influenzal Pneumonia, J. A. M. A. **72**: 1117 (April 19) 1919.

12. Lewisohn, R.: Am. J. M. Sc. **157**: 253 (Feb.) 1919. Pemberton: Surg., Gynec. & Obst. **28**: 262 (March) 1919.

13. O'Malley, J. J., and Hartman, F. W.: Treatment of Influenzal Pneumonia with Plasma of Convalescent Patients, J. A. M. A. **72**: 34 (Jan. 4) 1919.

from any preservative. With this exception, the serum used was rarely over two days old. The blood was never over twenty-four hours old, and as a rule it was used within twelve hours. Blood not used when obtained was put into serum at the end of twenty-four hours, or sooner, if the donor and recipient were not compatible.

Prior to a few years ago, it was assumed that the reaction resulting from the injection of an antigen was a specific one. The improvement in chronic arthritis following the reaction induced by the intravenous injection of typhoid antigen demonstrated that bacteria in no way responsible for the pathologic condition could cause a reaction that might be followed by improvement. Yet these "nonspecific" reactions may be more specific than at first appears. It is, indeed, quite possible that they furnish the incentive for the production of specific antibodies.

Beneficial results have been reported in various conditions employing a variety of foreign protein.

Cowie and Beaven[11] were able to produce a reaction in influenzal pneumonia which in several instances was followed by improvement by injecting typhoid antigen.

Lamb and Brannin[7] observed improvement following the injecting of a variety of foreign protein, but only when a chill was produced.

Roberts and Cary[14] employed a vaccine made of pneumococci, Types I, II and III, streptococci and staphylococci; and when a reaction was produced, improvement usually followed.

It is noteworthy that in 80 per cent. of our cases in which definite improvement was shown, there was no reaction which is suggestive of specificity.

Nineteen patients received injections of blood or serum from healthy individuals who had not had influenza or pneumonia. One having an empyema when treated is not considered. In five the prognosis was good (A and B), and 20 per cent. seemed benefited. This is in striking contrast to the 75 per cent. showing improvement in the same type of cases with convalescent blood or serum. In fourteen the prognosis was poor, and in 21 per cent. of these improvement followed. In one very sick patient the result was striking (Case 9). It is therefore evident that except in an occasional case the transfusion of "normal" blood is without benefit, with which opinion McGuire and Redden[8] concur.

Ten patients received serum or blood from patients who had had influenza but not pneumonia. Leaving out of account one patient with a large empyema, there were nine to be reported on. The prognosis was poor in six. Slight improvement followed in one case, and in two others, in both of which a chill occurred, there was marked improvement (Case 11). In all, twenty injections of blood or serum of influenza convalescents were given, and in four (20 per cent.) a reaction occurred.

On the assumption that the pneumonia following influenza might be due to secondary organisms, possibly the pneumococcus, we decided to try the effect of transfusion from healthy adults who had not had influenza or pneumonia, and who had been vaccinated with the triple vaccine prepared at the Army Medical School.

Notwithstanding the fact that almost all of our pneumonia cases belonged to Type IV, we thought this worthy of trial because Cecil and Austin[15] found that vaccination against the first three types appeared to diminish the number of Type IV infections. Blood was obtained a week following vaccination, as, at that time, immune bodies are at their maximum.

In seven cases the "normal" immunized blood or serum was given, but in only one case did improvement follow (Case 12). This was a lobar pneumonia with a high leukocyte count, and as the serum was administered on the fifth day, it is possible that the falling temperature was the normal crisis. In this connection it is of interest that Cecil and Vaughan[16] found that prophylactic vaccination with the pneumococcus lipovaccine did not lower the mortality in influenzal pneumonia.

Two patients with a hemolytic streptococcus pneumonia were given transfusion from patients convalescent from hemolytic streptococcus tonsillitis. One showed no improvement; the other had two injections, both being followed by a chill, and recovery took place (Case 13).

STUDY OF THE LEUKOCYTE COUNT

Uncomplicated cases showed the leukopenia so characteristic of the disease. A steadily rising count usually heraided the advent of an empyema. It did not seem that the degree of leukopenia afforded any trustworthy guide as to the prognosis, though a very low count indicates a general infection.

Notwithstanding that many counts were made, our records are not sufficiently complete to be of much value. It so happened that nearly all of the cases in which complete studies were made before and after injections proved to be hemolytic streptococcus cases.

Ross and Hund[10] found that there was a rise in the leukocytes following the transfusion of convalescent citrated blood, which in some cases reached 24,000. A fall to normal was observed as further improvement took place. They do not state whether any difference was observed in the patients who reacted with a chill and in those without a reaction. An increase is commonly found following a protein reaction. In one of our cases the leukocytes rose from 3,300 to 23,000 following a sharp chill occasioned by the transfusion of convalescent blood.

In another case in which there was no reaction following the injection of 300 c.c. of convalescent blood, the leukocytes rose from 5,700 to 13,400 by the end of twenty-four hours. A patient who received 200 c.c. of "normal" serum without reaction or notable improvement showed the following count: before treatment, 5,100; first hour after, 5,100; second hour, 5,700; twenty-four hours later, 4,200.

An increase in the number of leukocytes was noted in some who died, while some showed a falling count. In others there was no change. Following three injections of convalescent serum given in one case during twenty-four hours without reaction but with well marked clinical improvement, the leukocytes rose from 3,000 to 11,300.

The intense congestion of the lungs that characterizes this malady affords an ideal site for the growth of various organisms, the most dreaded being the hemolytic streptococcus. The longer the patient is ill, the greater becomes the danger of the infection. It is perhaps significant that hemolytic streptococcus

14. Roberts, Dudley, and Cary, E. G.: Bacterial Protein Injections in Influenzal Pneumonia, J. A. M. A. **72**: 922 (March 29) 1919.

15. Cecil, R. L., and Austin, J. H.: J Exper. M. **28**: 19 (July) 1918.

16. Cecil, R. L., and Vaughan, H. F: J. Exper. M. **29**: 457 (May) 1919.

infections were more frequent among the patients treated with "normal" blood than among those receiving convalescent blood.

Of eleven cases in which convalescent blood or serum was given during the first forty-eight hours of the pneumonia, in one a hemolytic streptococcus complication developed. Nineteen patients were treated on the third or fourth day, and eight died. Seven came to necropsy, and five showed the hemolytic streptococcus as the predominant organism. On the other hand, Lamb and Brannin[7] felt that the hemolytic streptococcus did not increase the mortality of influenzal pneumonia. We did not observe any difference in the results obtained with citrated blood, plasma or serum. Whole blood is to be preferred possibly on theoretical grounds, as the introduction of a considerable number of healthy blood corpuscles that will probably continue to function for some time might furnish material aid to the sorely taxed red cells of the recipient.

Cases of hemolytic streptococcus infections were fewest after the use of convalescent whole blood; but, as our series was small, too much significance should not be attached to it.

Specificity of action, which our cases suggest, is not borne out by the work of Lesné[17] and his co-workers, who have been investigating the action of citrated plasma. They believe that it acts as a foreign protein, and they found that patients injected with "normal" plasma or with their own plasma did as well as when convalescent plasma was used. Their series was small, and they appear to have produced a reaction in nearly all of their cases.

When laboratory facilities are at hand, the use of whole blood is simpler and quicker, as it takes only a few minutes to determine the iso-agglutinins. Plasma is obtained by allowing the citrated blood to stand several hours; no grouping of recipient and donor is required, and the serum from several donors can be pooled, which is of advantage.

It does not seem necessary at this time to describe the method of obtaining the blood and administering the treatment, as this has been taken up in detail by several writers on the subject.[18] To insure a supply of fresh serum, each patient when treated should promise to give some blood when convalescent.

SUMMARY

1. Fifty-six patients with influenzal pneumonia, in 70 per cent. of whom the prognosis was poor, were treated with the blood or serum of convalescent patients with a mortality of approximately 45 per cent.

2. Twelve cases were treated within forty-eight hours after the development of the pneumonia. One patient had a beginning empyema when treated; another developed a hemolytic streptococcus infection and died; and one other died. The remaining ten showed prompt improvement and recovered.

3. Thirty-two patients had been ill with pneumonia for an average of 3.9 days when treated, and 72 per cent. showed distinct improvement.

4. Of twenty-four patients ill 5.4 days when treated, 17 per cent. showed improvement.

5. Nine patients, six of whom were seriously ill, were treated with blood or serum of patients convalescent from influenza but who had not had pneumonia. Only two exhibited well marked improvement following the treatment, and both reacted with a chill.

6. Nineteen patients received transfusions of blood or serum from individuals who had not had influenza or pneumonia. No better results were obtained in the cases in which the prognosis was favorable than in the serious cases. Twenty per cent. seemingly were benefited.

7. Nine patients were given blood or serum from healthy adults vaccinated a week previously with triple pneumonia vaccine. In only one case, a lobar pneumonia with a leukocytosis, did improvement follow.

8. Sixteen per cent. of our patients treated with convalescent serum reacted with a chill and rise of temperature. With but four exceptions prompt improvement followed the reaction. In four critically ill patients, death was possibly hastened by the reaction.

9. In 80 per cent. of the cases in which definite improvement was shown no reaction was manifest.

10. Over half of the patients showing improvement required only one injection to obtain the desired results.

CONCLUSIONS

1. The transfusion of "normal" blood or serum is only exceptionally of value in influenzal pneumonia.

2. The blood or serum from individuals vaccinated against pneumococcus Types I, II and III possesses no advantages over "normal" blood in this type of pneumonia.

3. Too few patients were treated with convalescent influenza serum to warrant definite conclusions. The impression received was that it was less potent than convalescent pneumonia serum but of more value than "normal" serum.

4. The transfusion of blood or serum from convalescent influenzal pneumonia patients is occasionally of value though used as late as the fifth day of the disease. When used early, within the first three days, a distinct improvement in all symptoms is to be noted in the majority of cases. It seems to lower the mortality, shorten the course of the disease, and diminish complications.

5. The early employment of convalescent serum, therefore, appears to be a therapeutic measure of definite value.

902 Main Street.

17. Lesné: Presse Méd. 27: 181 (April 7) 1919.
18. Compare Footnotes 4, 7, 8 and 9.

TREATMENT OF INFLUENZA BY MEANS OTHER THAN VACCINES AND SERUMS *

JAMES B. HERRICK, M.D.
CHICAGO

This brief paper will be essentially an expression of personal opinion as to the treatment of influenza by means other than serums or vaccines. This opinion is based on an experience with the disease in the epidemic of 1889 and 1890 and the years immediately following, as well as in the epidemic through which we have just passed. Experiences of other physicians, as revealed by personal communication and by observation of their practice, are also laid under contribution. Many articles on the subject have been read, but no claim is made that the enormous mass of literature that has resulted from the visitations of this serious disease has been

* Read before the joint meeting of the Section on Pharmacology and Therapeutics, the Section on Pathology and Physiology and the Section on Preventive Medicine and Public Health at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

carefully studied or thoroughly digested. The task would be both discouraging and unprofitable, because so many of these articles are the result of superficial observation and limited experience; so many ignore the fact of the self-limitation of the infection and its natural course; so many conclusions are crude, and so many are reached by a mental process in which an optimistic credulity takes the place of the more desirable scientific skepticism.

Perhaps, however, the task would not be wholly unprofitable if it were to let us know more nearly where the profession stands today in the matter of drug and other treatment of influenza, and if it were to serve forcibly to bring home the lesson that as yet we have no specific treatment for the disease, no one or two drugs on which all physicians are agreed as to their preeminent value in prophylactic or active therapy.

No drug is known to prevent the occurrence of influenza. Many have been tried, but a review of the reports made by optimistic clinicians is far from convincing. A drug of this category is quinin, warmly advocated, though without adequate proof, by many Italian physicians, but by others of the same country regarded as without value.

Segregation of those who are ill and the prohibiting of public gatherings must lessen the number of contact infections. Perhaps it would be more nearly correct to state that such measures lessen the rapidity of the spread of the disease by lessening the concentration of exposures. The impression one gets from a consideration of the incidence of influenza as it has occurred in the camps and larger cities is that in spite of all practicable quarantine measures the epidemic goes through the populace sparing the immunes, but affecting the susceptibles, approximately 30 per cent., of the total number. Prohibition of public gatherings seems to spread the disease more thinly over a longer space of time. It may act also to postpone the occurrence until such time as the less virulent type is prevalent. By this diluent action fewer fatalities may result. Both these are desirable ends, and so these measures are to be encouraged.

Reports of clinical observations and experiments vary as to the value of the gauze masks. There can be no doubt that a properly constructed mask worn by the patient must lessen the danger of droplet infection of nurses, attendants and other nearby patients, and thus minimize the danger of carriage of the disease or of crossed infections. The masking of physicians and nurses acts in the same way, though not to the same degree. The suggestive effect of the mask, emphasizing care as to cleanliness, is not to be undervalued. The faulty way in which masks are sometimes constructed, the carelessness with which they are worn and the use of soiled masks are productive of no good and, at times, cause harm. The mask properly used has probably come to stay, though its exact value is far from determined. And such a clinical experiment as that in which the attempt was made to transfer influenza by the swabbing of the throats of healthy individuals with the nasal and throat secretions of influenza patients, without resulting transference of the disease, goes far to shake one's faith in the mask as a preventive measure against influenza.

In order to be convinced of the fact that there is no generally accepted plan of treatment, it is only necessary to see cases in consultation with other physicians, or to read the abundant literature on this disease of the last six months, or to go back to the voluminous writings published after the epidemic of 1890 and the years immediately following. The utter lack of uniformity as to drugs recommended is the best proof that there is no one remedy of sovereign value. That this is the fact, not alone in the English speaking medical world, but in other lands as well, is revealed by a perusal of the medical supplement of the *Review of the Foreign Press* issued by the British General Staff, War Office. Take, for instance, the number for April, 1919, in which there are abstracts from recent French, Italian, German, Scandinavian and Swiss journals. A catalogue of the remedies advocated reads: intravenous injection of camphor oil, camphorated oil with guaiacol, intravenous use of mercuric chlorid, intravenous injections of hexamethylenamin, quinin in large doses, collargol, colloid gold, colloidal metals in combination with antistreptococcal serum, calcium chlorid, neo-arsphenamin, diphtheria antitoxin and tetanus antitoxin. Certainly some one has blundered in reaching conclusions.

There is, however, one feature of the treatment of influenza on which all agree, namely, the importance of early rest in bed and the continuance of such rest until fever, cough and other symptoms have for several days disappeared. It is a common experience for the patient who does not at once give up when attacked by the disease, or who leaves his bed early and attempts to go to work the moment he thinks he has the requisite strength, to suffer from a recurrence of symptoms, possibly to have pneumonia appear, or to be incapacitated on account of persistent cough, irritable heart or nervous and muscular weakness. A few days added to the period of rest would often save the patient from a protracted convalescence or prevent serious sequelae.

A sunlit room, plenty of fresh air and a light diet with a liberal amount of liquids should be allowed and enjoined. The bowels should be opened fully at the beginning of the illness and not allowed to become sluggish at any time.

One of the hardest things to do in the treatment of a serious, self-limited, infectious disease is to refrain from prescribing drugs merely because the diagnosis has been made. The self-restraint of the level-headed physician is likely to be swept aside by the thought of the possible grave consequences of the malady, and his accustomed good judgment is apt to be smothered in the semihysterical atmosphere of alarm that pervades the community during the visitations of the epidemic. He forgets that a large proportion of patients with influenza do not need a single dose of medicine. There should be no routine treatment according to which certain drugs are given at stated periods, whether or not there is a clear indication for their use. The treatment is really expectant, symptomatic and individualistic.

It was my lot to be in charge of the influenza isolation wards in the Presbyterian Hospital, Chicago, during the recent epidemic. There were about 160 nurses, members of the hospital personnel and medical students from Rush Medical College who were patients. The disease was vicious and severe; pneumonia and other serious manifestations were common. Of the 160 patients, only one died, a nurse. So far as I could learn, there had been no prophylactic vaccina-

tion or use of serum in any case; no treatment of this kind was instituted in the hospital. There were no standing orders as to drugs. No acetylsalicylic acid, phenacetin, digitalis, codein, quinin, atropin or other remedy was to be prescribed as a routine. Rest in bed from the very beginning of the symptoms, and for several days after the cessation of the symptoms, was the standing order. Liquids were given freely. I have wondered whether if I had used some vaccine or serum or other supposed specific I might not now be eager to get into print with my record of only 0.6 per cent. mortality. Nay, I should have been in print long before this. I merely have the satisfaction of knowing that no lives were taken by drugs (I think I am free of the charge in the one fatal case with extensive pneumonia), and that cautious conservatism gave Nature a chance to work a cure. We trust we helped her in her healing work.

The remedy that seemed of greatest value was digitalis. Without waiting for alarming indications of failing heart to develop in the way of feeble tones, rapid action, arrythmia or dilatation, digitalis was given by the mouth, hypodermically or intravenously in small or large doses as need arose. I am sure that by its intravenous use several patients were very materially benefited, and that in some instances dangerous or even fatal heart failure was averted. I never saw harm result from its careful use, except that occasionally it induced nausea when given in large or frequent doses, as it necessarily had to be. Next to digitalis, the drug that seemed to me to be most helpful was opium—nearly always given as a hypodermic of morphin, or when the allaying of an annoying cough was the desired aim, in the form of heroin or codein. Pain, sleeplessness and severe cough have seemed clearly to indicate its use. The benefit from one sixth grain of morphin to the patient who, racked with cough and distressed by the pain of a pleurisy, has not slept for twenty-four hours, is too self-evident to need argument. There is too much fear of a hypodermic injection under these circumstances; fear both on the part of the physician and of the laity. Camphorated oil may be extremely helpful when there is a weak heart. In influenza in a patient who had been asthmatic and in whose chest there was much wheezing, I have seen good come from administering epinephrin. Hypodermoclysis or proctoclysis may be helpful. I think I saved one life by bleeding.

But I must be careful, or I shall lay myself open to the charge of having my pet drugs, or a treatment which I claim is curative. And to have favorite remedies which we talk about too much is to expose ourselves to the danger of believing in them more than is warranted by the facts. Even the quack comes to have a half-way belief in the curative powers of his methods. One ought not to be a nihilist as regards drugs in this disease; but no apology is needed for being a good deal of a skeptic as to the value of much of the therapy that is prevalent. Wholesale and indiscriminate drugging and the giving of huge doses is much too common. There should be a management of influenza as rational and simple as that of a developed case of typhoid fever, in which, today, in the hands of the intelligent physician and the enlightened public, drugs play a subordinate rôle. How much harm may be done by overdrugging no one can estimate. But the danger is real and not imaginary.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. ROSENAU, FROST, PARK, CONNER, ROSENOW AND STURDIVANT, MC COY, STOLL AND HERRICK

Dr. Augustus B. Wadsworth, Albany, N. Y.: The essential conditions under which the etiologic relationship of an organism to an infectious process is established have not been fulfilled with any organisms that have been isolated from influenza. We attempted to study this whole problem very carefully and thoroughly—bacteriologically and pathologically. At first we failed to find the influenza bacillus in the cases studied, but later, with improved technic, we were able to establish its presence. At first these cultures apparently were all similarly variable in morphology and uniform in their hemophylic cultural reactions. The thermal limits of growth were found to be quite constant and uniformly low, as compared with many other pathogenic species, ranging between 40 C. and 41 C., and nearly all of the cultures failed to grow above 40.5 C. By further study it was found that twenty-two cultures of influenza did not acidify any of the carbohydrates; forty cultures acidified dextrose; and sixteen other cultures formed both gas and acid in dextrose. The toxicity of these cultures varied greatly in animals. Infections seldom developed in them. When injected into the trachea of rabbits, the cultures of the influenza bacillus and their filtrates frequently gave rise to considerable lung reaction and lesions quite as extensive as those induced by pneumococci. In some instances, the lung lesion was more marked when both pneumococci and influenza bacilli were injected. Many of the lesions found in the rabbits' lungs after injection with pure cultures of the influenza bacillus resembled very closely lesions found in the lung at necropsy in cases of human influenza. But the most toxic reactions of purely hemorrhagic pneumonitis so characteristic of the lung involvement of human influenza were not marked in these experiments in rabbits. Twenty-four hours after tracheal inoculation, the influenza bacillus was recovered from the lung lesion, but at the end of forty-eight hours no organism was obtained. Evidently the rabbit is relatively insusceptible to infection with the influenza bacillus. In our study of the practical value of the vaccine of the influenza bacillus, we made investigations in thirty-three state institutions. In twenty-eight we found that a greater number of cases of influenza developed among the vaccinated than the unvaccinated after vaccination had been started. In another institution the number of cases that developed among the vaccinated was 1.24 per cent. and 1.1 per cent. among the unvaccinated; and in another, among the vaccinated 2.48 per cent. and 4.2 per cent. among the unvaccinated. In another institution 461 inmates were vaccinated. Dr. Park's laboratory failed to find the influenza bacillus in more than three inmates. The institution was very carefully quarantined during the epidemic, and no influenza developed for three months. Then there was an outbreak of 203 cases, 166 cases developing among the vaccinated inmates and thirty-seven among the unvaccinated inmates. The cases that occurred among the unvaccinated included those that were admitted to the institution after vaccination had been started. Of thirty-eight cases examined, thirty-two had influenza bacilli in the discharges.

Dr. Anna W. Williams, New York: I wish to emphasize one point in regard to the etiology of a pandemic disease, and that is, that there is no necessity whatever for wasting any time at first on determining whether an organism suspected of being the etiologic agent of the pandemic is pathogenic or not. The important thing is to decide whether or not we have one type among the strains isolated. Until this point is settled in the affirmative we need not pay any attention to the so-called postulates of Koch. If the pandemic is a true microbal pandemic, that is, starting from one cause and spreading through that cause, we should be able to prove that there is one variety or type of microorganism that is responsible for the pandemic. Of course, we have to determine what test we must choose to prove this. Up to the present, we have decided that we will accept the agglutination test with the absorption of agglutinins for the

test of type until somebody proves that this test is not the final test. We have shown that all the influenza strains we have isolated do not respond to this test; that practically each strain is a law unto itself, with the exception of strains picked from one case. Now, if it is true that that test can be accepted, and if it is true that by our methods we have not missed a pandemic strain, or that the strains do not readily change in their power to produce the same agglutinins, then the influenza bacillus has nothing whatever to do with the initiating cause of the epidemic.

DR. EDWIN R. LE COUNT, Chicago: Certain salient facts stand out prominently in connection with this disease. One of the most astounding is the way in which it spread. It has been compared to measles and other similar eruptive fevers, and it may be that if the human race was as susceptible and less immunized to measles than it is, and we should have measles suddenly thrown on us, measles would spread over the world in a way similar to the spread of influenza, but outside of such a conception of measles, or some other infectious disease, we have nothing to compare influenza with, in the way in which it has extended. Therefore, it does seem that its causation should be in a way quite unique also. The clinical manifestations are correspondingly fairly clear, and through the investigation of MacCallum, Goodpasteur and Wolbach we are gradually getting somewhat of a clear idea as to the changes peculiar to the disease. Among the changes that do occur, there are certain features of the lung alterations that are conspicuous. One has been noticed by all who have studied these conditions in dead bodies, and that is the exceedingly great wetness of the lungs, and the way in which the fluid of the blood runs out into the pleural cavities. In the earlier part of the treatment, a mistake probably was made in withdrawing such fluids from the pleural cavities, as it amounted to continued bleeding at intervals, which probably did harm. Later, I have understood, this treatment was somewhat abandoned.

Microscopically there are also a few features that are characteristic. One is the thin layer of fibrin in the minutest air passages. Such a limitation of fibrin to the lining of the air sacs is also rather unique in the histology of lung inflammations. About twelve or fifteen years ago an epidemic of what we called ordinary lobar pneumonia or lung fever spread over this country. Many thousands died in a few months. Since the epidemic of influenza last fall, we saw practically none of that old type of lobar pneumonia. Lobar pneumonia in an anatomic sense was observed during this epidemic of influenza; but not lobar pneumonia in the full clinical sense. The lobar pneumonia we saw is post-influenzal and is due to secondary infection; moreover, the lobar pneumonia observed during the recent epidemic has been unlike that of twelve or fifteen years ago and of even more recent years, different anatomically in at least one noteworthy way: the absence of a heavy "shaggy" precipitate of fibrin in the pleural cavity.

DR. HENRY ALBERT, Iowa City, Iowa: Dr. Frost stated, I believe, that we have no evidence of immunity against influenza. I should like to cite an instance in which I believe we have very good clinical evidence of the existence of such immunity. A state institution at Mitchellville, Iowa, was investigated by our epidemiologist, Dr. Hamilton. This institution had a population of 180. The inmates were housed in six different cottages, but all received instruction in the same room. Early in October, 1918, in connection with the general epidemic, the disease gained a foothold in this institution. The administrative officials immediately isolated all the affected persons. Inmates of only three of the cottages were exposed, and the disease was entirely limited to the inmates of these three cottages. Seventy-six cases occurred at this time. As a result of very careful isolation, no further evidence of the disease appeared until two months later. At that time, one of the teachers was given permission to leave the institution for a few days. She returned with the beginning of an attack of influenza. In the course of a few days another epidemic appeared, to which every person in the institution was exposed. During the second epidemic, there were eighty-two cases of the disease, but not a single instance of a recurrence of the disease among the seventy-six who had had the disease during the previous epidemic. Of the total population there were only twenty-two, or 12 per cent., who did not contract the disease during either of the epidemics. It seems to me very significant that during these two epidemics, out of a population of 180 persons, there was not a single case of recurrence during the second epidemic and I cannot help but think that it must be due to the development of immunity.

DR. ALEXANDER LAMBERT, New York: I was interested as I heard the other speakers refer to the difference in the clinical character of the pneumonias as modified by the recent epidemic. Perhaps, the experience with the pneumonias before the epidemic of 1889, during 1889, and during subsequent years, and in this epidemic may be of some interest. When I was in the hospital in 1885, 1886, 1887 and 1888, the pneumonias were clear-cut lobar pneumonias, very few of them bronchopneumonias. In 1889, as the influenza epidemic came to New York City, there were the same unusual pneumonias as in this last epidemic, with the same sodden kind of lungs. The pathology was clearly stated and taught by Delafield afterward, that the lungs showed a maximum of congestion and a minimum of exudation, and he further pointed out at that time that these were bronchopneumonias, but they did not differentiate the bacterial flora. They believed then that the pneumococcus caused them all and the streptococcus was not differentiated. Nor was it until 1892 that the description of the influenza bacillus was brought out. In 1892, within a few days after Pfeiffer's article was published in New York, I separated out the influenza bacilli for Delafield from some of his patients. The pneumonias for four or five years remained in New York, queer and patchy as if they were mild dying out types of influenza. They later became more the pure lobar type, and that continued through quite a while. Later, in 1901, an epidemic of grip appeared, and the bronchopneumonia came back, and the lobar type seemed to disappear again. Five or six or seven years ago the type returned to the clear-cut lobar type, and again it has returned to its predominating bronchopneumonia type. The differentiation this time which is helping to solve the problem much more clearly and intelligently is the differentiation of the primary and the secondary infections, the differentiation more clearly of the influence of the various bacteria, and particularly of the serious influence of the streptococcus. In studying the various types with the roentgen rays the pathology was clear and easy to understand.

DR. H. B. WOOD, Providence, R. I.: One important factor was the hemolytic infection of the throat in army camps throughout a number of states during the summer of 1917. A house-to-house canvass in five towns in New York state showed that about 85 per cent. of the persons closely exposed to the infection contracted the disease. In other words, what we call influenza has about the same infectiousness as measles. Sex had absolutely no effect. The people contracted the disease according to their opportunity to exposure.

DR. SOLOMON SOLIS COHEN, Philadelphia: One may agree thoroughly with Dr. Herrick's philosophic principles, yet differ with his application of them. That different remedies are advocated for one malady by no means implies that all are worthless. All may be helpful under given conditions, or even if two are useless, the third may be good. The point is, that in a matter not susceptible of experimental proof, but depending on individual observation and therefore virtually a matching of opinion against opinion, we cannot condemn, offhand. It is true that there is among the younger teachers today no general agreement on the proper method of treatment, other than serums and vaccines; but in the epidemic of thirty years ago there came to be general agreement as to what was useful, what was useless and what was harmful. Antipyrin and acetanilid were at first advocated by great authority, but their deadliness was soon recognized. Unfortunately, in Philadelphia at least, that lesson was forgotten. If I may judge from what I frequently heard in the consultation room, there was a widespread tendency to use two very harmful drugs, acetylsalicylic acid and acetphenetidin. The peak of mortality in Philadelphia shown on the charts resulted from many factors, among others, the great industrial population drawn from all

over the country, the crowding and promiscuous visiting in certain quarters, the lack of doctors and nurses. But it may have been, in part, owing to this bad practice. Not that every one died who received these drugs; quite a number survived both the disease and the medicine; some, no doubt, to suffer later from weakened heart and nerve depression. But in the majority of the cases in which they were used, these drugs deprived the patient of his chance to recover. Of that, I have no doubt. Salicin and certain of its derivatives, namely, sodium salicylate and quinin salicylate and cinchonidin salicylate (not aspirin, the acetylsalicylic ester, remember—that is a dangerous cardiovascular depressant) were very useful, not as specifics, but as aids. Quinin dihydrobromid and quinin and urea hydrochlorid were also helpful, not only in cases which developed pneumonia, but in preventing pneumonia. DaCosta used to tell us that influenza is "at once the least fatal and the most fatal of all diseases." Of itself, the least fatal; in its complications and sequelas, the most fatal. If one thing has been brought out above any other in this discussion, it is that influenza is not merely a mixed infection, the term is not sufficient. Nor are the death dealing organisms merely secondary invaders. Influenza is a malignant symbiosis and must be studied from that viewpoint before we can understand its pathology and epidemiology. There is one drug that antagonizes the influenza poison, opposing this vital depressant throughout its whole range of influence. It is itself a dangerous drug if used indiscriminately; but it is helpful if used properly. That drug is coca, and its alkaloid, cocain, used with due caution and under proper indication.

Dr. Hyman I. Goldstein, Camden, N. J.: It is very fortunate for Dr. Herrick to have had the more or less unusual opportunity to treat most of his 160 patients from the very beginning and in a hospital. I would like to ask Dr. Herrick what he would do under the usual circumstances with which general practitioners are confronted. In attempting to prevent the numerous deaths which Dr. E. C. Rosenow told us resulted from the secondary complications, are we justified in using the vaccine? I think we are justified in using vaccine, even if we do not know the specific cause of influenza, as a preventive and therapeutic measure against the complications. We have not a "cure all" or "sure cure" for all cases of any one disease. But are we justified in doing away with the use of mercury and arsphenamin in syphilis because it is not a cure in all cases? Digitan (digipuratum), quinin dihydrochlorid, caffein and coden were used symptomatically with considerable benefit to my patients. Benzyl benzoate relieves the pertussis-like cough so often heard in this epidemic. We must make the best use possible of what we have and, of course, we hope that our experts will eventually give us something definite with which to work.

Dr. Frederick T. Lord, Boston: There seems to me no ground for the belief that a vaccine in the treatment of disease is of any value whatever. Vaccines may be of use in prophylaxis, but they have never been shown to be of value in treatment. Regarding the use of convalescent serum in the treatment of influenzal pneumonia, the presence of protective substances in the blood at the time of or after the crisis in lobar pneumonia has been established, but they are not constantly demonstrable. In ordinary lobar pneumonia, therefore, treatment with convalescent serum can hardly be expected to be followed by any very striking results. Stress has been laid on the favorable symptoms resulting from the use of convalescent serum. In a disease so variable in its symptoms as influenzal pneumonia one may readily fall into error in a judgment based on favorable symptoms following the administration of serum. Only a judgment based on mortality should count, and also that one must take into account in that judgment the very variable mortality existing during the epidemic. In one of our camps the figures indicate that the mortality from influenzal pneumonia was at one time 54 per cent. In the Students Army Training Corps at Cambridge the mortality was 8 per cent. Among sixty-one cases in the civilian community the mortality was as low as 3.2 per cent. the figures being gathered from civilian physicians. In view of this variability in mortality, it would be highly undesirable to base any final judgment regarding the value of the method on any other than series of serum treated cases controlled by a simultaneous series not so treated. At the Massachusetts General Hospital we had twenty-three patients who were treated with convalescent serum, and of this number we lost six. At the same time we had twenty-five controls and we lost three.

Dr. Albert E. Roussel, Philadelphia: Experience in the 1889 epidemic and the present one, from the similarity of the clinical symptoms, would lead one to appreciate the fact that we were dealing with the same disease and probably due to the same organism. The second point of appreciation in both of these experiences is the fact that uncomplicated influenza has practically no mortality. It is true that the number of cases of complications of the respiratory tract were numerous in this present pandemic, and disproportionate to the first, but uncomplicated influenza practically cures itself, and there is no question at all that the existence of large bodies of troops in and around cantonments invited probably the same combination of organisms and, on the other hand, the diminished resistance of the civil population caused by underfeeding and worry made this probably the most intense and virulent type of influenza that we have yet seen and, possibly, that we may ever see. The proportion of jaundice was rather larger than has been mentioned. Possibly 4 per cent. of the cases of pneumonia showed jaundice, and almost all the patients exhibited tenderness in the neighborhood of the gallbladder, and it is a question whether there were not many cases of catarrhal cholecystitis, and a number of other cases of a more severe type. Among 186 hospital cases of pneumonia, excluding the deaths that occurred within twenty-four hours, the mortality was a fraction of more than 25 per cent. On the other hand, I had at one hospital thirty-five cases of influenza among the interns and nurses with six cases of pneumonia, and all got well, because they were taken care of at the proper time. As regards drugs, I think bicarbonate of soda, in addition to the physiologic sodium chlorid solution, is of very considerable value. In the pneumonia cases, about 8 per cent. showed albumin urea, and about 4 per cent. distinct nephritis.

Dr. Will Walter, Chicago: My interest in this subject is from the viewpoint of prophylactic inoculation in its relation to the upper respiratory tract. I can enlighten Dr. McCoy as to the bacillus "septus," as I did a research about fifteen years ago after a visit to Wright's clinic and laboratory, where we studied *Bacillus septus*, which had been presented as a cause of acute rhinitis by Dr. Allen of London. I reported on 100 of 300 cases and analyzed the results. My research covered the bacterial flora of the upper respiratory tract and *Bacillus septus* was found in slightly more than 55 per cent. of my cases of acute rhinitis. Since that time I have not seen it, but it is still reported in English literature. It belongs to the diphtheroids. I took the liberty of changing the name of this bacillus to *Bacillus segmentosus*. It is a wedge shaped segmented organism tending to palisade formation. It is mentioned in the last edition of Jordan's textbook on bacteriology. Dr. McCoy's records, so far as they relate to preventive inoculation, show a violation of the fundamental principles laid down by Wright, who always was very emphatic and still insists on the postulate that if you are going to do preventive inoculation in the presence of an epidemic you must use very small doses—infinitesimal doses. In the cases I have seen reported by Dr. McCoy as failing to show results, enormous doses were given, and not only that, but they were repeated on the third and again on the fifth day. This would be the very method to bring about a negative phase and therefore to increase the susceptibility of the patients to the organisms against which we are inoculating. It must not be forgotten that this is done not to prevent influenza, the cause of which is unknown, but to immunize, as Dr. Rosenow says, against the known organisms which kill.

Dr. M. K. Wylder, Albuquerque, N. M.: Observations are very misleading. I use the prophylactic vaccine. I used it in a girls' boarding school in which I immunized, or at least attempted to immunize, the pupils, teachers, etc., and at the same time we established and enforced a complete

quarantine. There were eighty people in that institution; not a single case of influenza developed. One mother insisted on being admitted to visit her daughter. Being refused, she took the girl home. In less than a week that girl was dead from influenza.

DR. WILLIAM C. WOODWARD, Boston: Reference has been made to the influence of the closing of places of public assemblage and of the wearing of masks. I think, however, we may adopt a more nearly universal preventive measure that will tend to prevent not only influenza but also pneumonia, whooping cough, measles, diphtheria and diseases of the respiratory tract generally. We must learn to look on the discharges from the nose and throat as essentially as dangerous as the discharges from the urinary tract and the digestive tract. We must take the same precautions to prevent the transfer of such discharges from person to person that we take to prevent the transfer of fecal matter and urine, not merely when persons are sick, but continually, if we are going to control or do away with diseases of the respiratory tract. We must seek not only to control these mucous discharges in public places, but also in private life, at home, in places of employment, and so on. In short, we must at all times and all places take the same precaution to prevent the interchange of mucus and other secretions from the nose and the throat that we take to prevent the interchange of urine and fecal matter.

DR. C. C. BROWNING, Los Angeles: There is an element which I have not heard mentioned here that possibly may enter into some of the discrepancies which apparently characterize the statistical data in connection with this disease, the difference in the virulence of infection, or the acquired resistance of individuals of different communities. At Fort McArthur, during the earlier period of the epidemic on the Pacific coast, we received sporadic cases of influenza, about twenty-four cases from October 20 to 26, all of which came from the more or less thickly populated districts. These were of moderate severity; two cases of bronchopneumonia developed with no deaths. October 27 we received about 800 men who came from the mountainous districts and from the ranges in the West, men who were accustomed to outdoor life and had not been in crowded communities. Of these men forty were suffering with acute influenza. Within the next three days about 115 had been received into the hospital. Of these eight died within twenty-four hours of the first manifestation of symptoms; eleven died within forty-eight hours and twenty-eight died later. We learned from friends who visited the sick that the death rate was not larger among these recruits than among the families at home. Was the infection increased in virulence by reason of the persons having been accustomed to contact with the more common infectious organisms?

DR. H. H. COONS, Los Angeles: The epidemic reached us at the base hospital at Fort Sam Houston about October first. We used all the remedies recommended without avail. Then I began using the vaccines, very carefully at first, because vaccine therapy was not recognized as a treatment by the profession generally. In certain wards we got very good results. Almost uniformly within thirty to thirty-six hours after an injection of vaccine sufficient to get an initial rise of temperature, there was a very marked decline, better respiration, lessening of cyanosis and, in most cases, an improvement in the general condition of the patient. I did not suggest it as a specific but as an adjunct. We protected our patients from draughts and we put them to bed. We gave them fresh air, but not at the temperature of outdoor air. In the wards where I used vaccine the mortality rate in pneumonia was under 7 per cent. In the wards where we did not use vaccine but used all known precautionary measures, the mortality was 18 per cent. Approximately 100 patients were treated with vaccine. A great many more than that were not treated with vaccine.

DR. W. A. BASTEDO, New York: There is no evidence whatever that more acetylsalicylic acid and acetphenetidin was employed in Philadelphia than in New York or Boston or any other city; nor was our death rate any different, except that it was worse. A large number of patients who recovered had had very large doses of these drugs; others died, as did some who had had small doses.

DR. E. C. ROSENOW, Rochester, Minn.: The vaccine which we used was made to contain as soon after isolation as possible the bacteria isolated in influenza and the accompanying pneumonia together with type pneumococci. It contained, as we found months later, a high percentage of strains of green producing streptococci which, according to their serologic reactions, appear to bear etiologic relation to this disease and with which the picture of influenza has been closely simulated in animals. The lowered death rate and even the diminished incidence of recognizable influenza and the milder attacks noted in persons inoculated over that in the uninoculated, wherever the vaccine was properly used, is thus to be expected. A degree of protection from the use of this vaccine is just as rational, in the light of the newly discovered facts, as is the protection following prophylactic vaccination with pneumococci and other vaccines. The difficulties in evaluating the results, as pointed out by Dr. McCoy, have been considered and the sources of error eliminated. The immunity appears to be of relatively short duration, there being a falling off in six week to two months. The results recorded, however, represent observation extending over a period of from three to six months. Revaccination, consisting of one injection of the middle dose every six weeks to two months, while the disease is prevalent or as new waves appear, is therefore to be recommended. Averaging all the results obtained, it appears that the incidence of influenza was about three times as common and the death rate five times as high among the uninoculated as among the vaccinated persons.

DR. JAMES B. HERRICK, Chicago: Dr. Goldstein asked a question as to what is a general practitioner, deprived of the opportunity to put his patients into a well-managed hospital, to do. I think that what he should try to do is to get hold of his patients as early as possible, insist on the patients going to bed, make them stay there until well and not to overdrug them. I have been very much impressed by the harmfulness of many plans of treatment. That is why I have not used the vaccine or serums. I am not on principle opposed to them, but I do not think that as yet we have the proof that they are helpful. They may even be harmful. And so I say that the general practitioner should, if possible, get his patient early and give him some general line of treatment that has at least the virtue of harmlessness. The patients that came into that same hospital from the outside, into the same ward, under the care of the same doctors, with the same nurses, the same hospital assistants, the patients that came in on the second, third and fourth days of the disease, often with pneumonia, died, with a mortality which was so large that I hesitate to confess it. If those patients had been got hold of earlier, in my opinion, more of them would have recovered.

"Patent Medicines" in Venezuela.—At its session of March 27, the Academy of Medicine of Venezuela approved an opinion prepared by its permanent secretary, Dr. L. Razetti, as to which "patent medicines" should be considered as scientific preparations and which should be considered as commercial preparations. The report says: A "patent medicine" or rather "pharmaceutical specific" is a preparation the formula of which does not appear in any Pharmacopeia, and fulfills the following requisites: it is inalterable; has true merit, either on account of its form, its mode of preparation, its novelty or its composition; it is manufactured on a large scale and properly put up for sale; it has a rational name that indicates its chief components, and in no case based on its therapeutic properties; it gives on its label the name and quantity of each of the active substances contained in each dose; and it has been examined and approved by the National Office of Public Health. Those fulfilling these conditions may be considered as scientific preparations capable of answering therapeutic demands. Those that do not comply with these conditions should be considered as commercial preparations and their use should be forbidden for the benefit of the public health.

TREATMENT OF THE SEVERE VOMITINGS OF EARLY PREGNANCY*

FRANK W. LYNCH, M.D.
SAN FRANCISCO

It is difficult to estimate the frequency either of the ordinary morning sickness or of the serious vomitings, since both occur more frequently in America, France, England and Russia than in Germany, a fact which has been emphasized by those who see only a neurotic factor for its causation. Horwitz in Petrograd (1883) reported a history of some form of nausea and vomiting in 84 per cent. of his cases (morning sickness): Giles in London (1893) found 47 per cent.; and Gerst in Paris (1903) noted it in 66 per cent. I have found similar histories in 45 per cent. of 500 of my recent clinic cases at the University of California; 123 of 249 primiparas and 103 of 251 multiparas giving a history of nausea and vomiting, while in 46 cases, or 9 per cent. of the same series, there was a history of nausea without vomiting. In 500 private cases, exclusive of those referred for treatment of vomiting, 58 per cent. gave me a history of nausea and vomiting. It is even more difficult to ascertain the frequency of the serious types.

The small percentage of serious cases in Germany is quite remarkable. Carl Braun stated that he had not seen a fatal case in a series of 150,000 pregnancies. Similar statements are made by Höhl, Lomer, Frank and Strassman, although Guéniot (1863) collected from the French literature forty-six fatalities in a series of 118 cases of pernicious vomiting and McClintock (1872) reported fifty fatal cases in England. Yet even as recently as 1914, Bondy reports only twenty-one cases of pernicious vomiting in 10,000 obstetric cases in Breslau and quotes Baisch's series of twenty cases in 20,000 cases in Munich, and von Herf's report of thirty cases in 17,000, expressing his surprise that his cases were observed in married and multiparous women since he had been of the belief that the condition was apt to occur only in illegitimate primiparas. Yet these figures may not give a correct idea of the incidence of the disease in German countries since they are drawn entirely from hospital experience, and few believe that Pick's frequency of one case in 1,000 obstetric cases in Berlin represents the true frequency, since nearly every practitioner of experience here has met with several serious cases. In this country, Williams states that he observed only two cases in 5,000 clinic cases in his service at Baltimore, although he had studied comparatively large series in private cases during the same period. In 2,750 clinic cases at the University of California Hospital, fourteen entered for the treatment of vomiting, nearly all presenting during the last three years.

ETIOLOGY

Little is known of the etiology of this condition. Many factors have been urged as causative but do not stand careful scrutiny. A careful survey of the facts in hand forces one to conclude that, under certain conditions and in some way at present unknown, the maternal organism is sensitized to vomiting by the state of pregnancy. This conclusion seems rational because, after the exclusion of chronic appendicitis, ulcer and other stomach and intestinal conditions which cause vomiting even in the nonpregnant woman and which may consequently be a factor in certain of the vomitings during pregnancy, there remains a class of cases in the great majority of which we cannot demonstrate conditions named in the texts as etiologic factors.

PATHOLOGY

The pathologic picture varies within wide limits, yet the liver is the seat of the most important changes. The milder cases of vomiting which come to accidental death present little more than cloudy swelling of the parenchymatous tissue. Yet nearly all the cases of vomiting which result fatally present structural changes in the liver ranging from the simple fatty forms to those characteristic of acute yellow atrophy. The most marked type presents degenerative changes which begin about the central vein of the lobule and gradually extend toward its periphery.

The serious vomitings of pregnancy have been classified clinically under many headings. The chronic and acute forms have been recognized for many years, the former as a slow and gradual development from the more severe type of morning sickness which rarely changes type until late in the disease, and the latter with acute onset and rapid progression soon characterized by extreme prostration and a fecal type of vomiting. Quite naturally attempts were very early made to establish a classification on etiologic grounds and the serious vomitings have been grouped accordingly as due to reflex-neurotic or toxemic causes. The chronic forms mentioned above correspond usually to the reflex-neurotic group which essentially is nontoxic in type in contradistinction to the acute forms which are frankly toxemic. Yet the whole question of clinical classification hinges largely on the pathology, which appears to countenance the clinical divisions, since patients dying from the neurotic-reflex nontoxic or chronic groupings present liver changes of the simpler types, whereas the liver changes are most marked in the cases of the toxemic group. Yet the whole question is not so simple as would first appear, because deaths in the chronic groupings are comparatively rare and are even more infrequently investigated by careful necropsy. Moreover, patients dying of the toxemic type of vomiting occasionally present only liver changes of comparatively slight forms which are in no way suggestive of the lesions of acute yellow atrophy so often encountered. So it is quite problematic whether the pathologic picture presented in the liver of those who die of any or all types of the serious vomitings represents various progressive stages of the same process.

The importance of the liver in the pathology of the disease was presented as early as 1879 by Matthews Duncan, but was lost sight of almost immediately until revived by the cases of Stone and Williams in 1901 and 1902. Many have turned their attention to study of the liver function, but thus far no one method has given assurance of accuracy.

It is a mark of wisdom of American teaching that abortion is resorted to early rather than late when the patient does not respond to the ordinary therapeusis. Yet this treatment, while safe, is undoubtedly unsatisfactory, in that, contrary to the opinion of Tarnier and

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* From the Woman's Clinic, University of California Hospital.
* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventieth Annual Session of the American Medical Association, Atlantic City, June, 1919.
* Owing to lack of space, this paper has been abbreviated for publication in THE JOURNAL. The complete paper appears in the Transactions of the Section and in the author's reprints.

Budin, the disease tends to recur in subsequent pregnancies. It therefore follows that men who are interested in this problem nearly always have in charge patients who have aborted in the past but who are willing to endure even considerable risk of life to secure a living child.

DOCTRINE OF AMMONIA COEFFICIENT

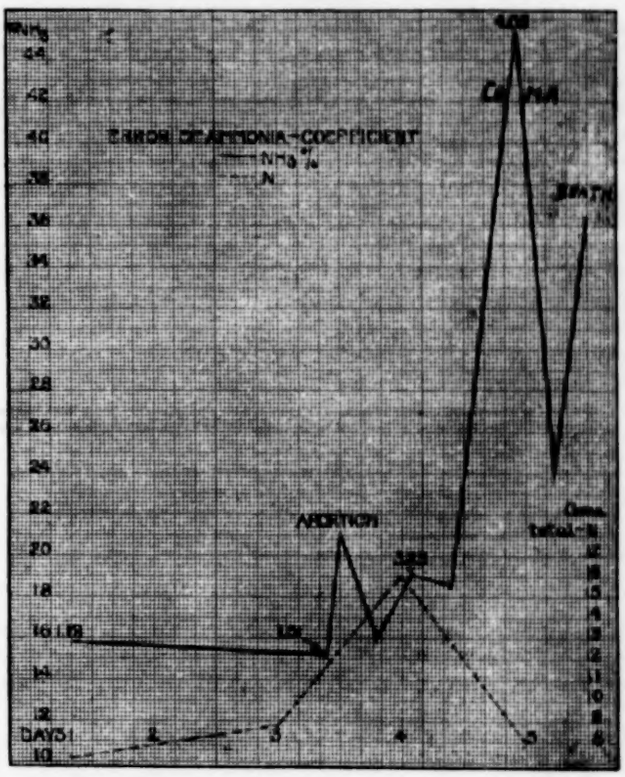
Several investigators had studied the partitions of the urinary nitrogen in the toxemias of pregnancy without convincing conclusions prior to 1905, although Whitney's observations on a small series of eclampsia cases strongly suggested that an increase of the ammonia coefficient in that disease might be a protective measure. Folin's observations on thirty normal urines and their variations following changes of diet had not been recorded when Williams undertook the investigation of the urine in a series of vomitings of pregnancy. Williams found that there was a marked difference in the ammonia coefficient in the cases of the reflex-neurotic and the toxemic types, the former remaining at normal limits whereas the latter ascended to 32, 38.5 and 46 per cent., respectively, in three of his cases. After a careful review of the literature, he confessed his inability to determine the cause since there was an absolute lack of knowledge concerning the toxic material at fault and whether it was derived from mother or fetus. Whether it was merely a manifestation of an acid intoxication or the inability of the diseased liver to effect complete oxidization, future investigation might determine. Numerous investigations by other observers have confirmed his observation in part, some, as Underhill and Rand, concluding that the increase in the urinary ammonia nitrogen was indicative merely of an acidosis of starvation, while others have controverted the theory, stating that the toxemic type may exist without such a resulting condition. Since that time, we have learned much concerning the formation of ammonia. We recognize that it is influenced profoundly by the type of diet and by medication and by other factors, that it probably is not an index of the liver functions, but that the fact remains that it is increased in the condition of acidosis, and serves the purpose of saving alkali for the body.

ERRORS OF AMMONIA COEFFICIENT

My observations, begun shortly following Williams' investigations, have convinced me of the general truth of his work; namely, that the more serious vomitings are characterized by an increase of urinary ammonia, yet because of many factors influencing the coefficient it is better to state the ammonia nitrogen in terms of absolute amounts, since without this control the ammonia coefficient occasionally may be misleading. The coefficient is the proportion of the total urinary nitrogen that presents as ammonia. If the absolute amount of ammonia remains stationary, the coefficient will decrease with an increase of total nitrogen and will increase with the fall. This is clearly shown by Folin when presenting the variations seen in health. Under a diet giving 16 gm. of total urinary nitrogen, the ammonia weighed 0.7 gm., giving an ammonia coefficient of 4.3 per cent. When the patient was given a nitrogen-free diet only 3.6 gm. of total nitrogen appeared in the urine. The ammonia nitrogen weighed 0.42 gm. yet constituted 11.3 per cent. of the total nitrogen. That is to say that the ammonia coefficient rose from 4.3 to 11.3 per cent. in spite of an actual reduction in the absolute amount of the ammonia, the change being accomplished largely by the fall of total nitrogen. Yet without all of these figures, the rise of the ammonia coefficient might be taken as an indication of a beginning acidosis. A further example of the occasional failure of the ammonia coefficient to express the true facts is shown by the accompanying chart.

If the total nitrogen remains stationary and the ammonia increases in amount, the ammonia coefficient increases, thus resembling the curve of the increase of ammonia by weight. Yet this condition is not frequently seen in the severe types of vomiting.

Because of the restriction of food, the total nitrogen in the urine comes largely from the breaking down of body tissues. Comparatively little nitrogenous tissue breaks down early in starvation since the loss in weight depends in large part on loss of fats, the fatty acids



The absolute amounts of ammonia are printed on the curve of the ammonia coefficient. Had it been charted, the curve would have given warning of the seriousness of the case one day before the rise in the ammonia coefficient did so. After the abortion the coefficient fell (because the total nitrogen had risen) to what was considered a safe margin. In reality, the ammonia had not fallen but had increased in absolute amount from 1.51 gm. to 3.23 gm. without marked disturbance in the ammonia coefficient. The case is taken from literature.

being oxidized largely by the action of the glycogen stored in the liver. We should expect, therefore, variations in the partitions of the urinary nitrogen in fat and thin subjects, dependent in turn on the relative amounts of carbohydrates stored in the body suitable for oxidization of the resulting fatty acids. The character of the last food ingested is also important, since Voit has shown that in a dog the influence of the last meals persisted for the first six days of starvation.

ACIDOSIS IN NORMAL PREGNANCY

Realizing that urinary ammonia gives at best a poor record of the acidosis, I had Emge in my clinic undertake a series of investigations to determine the acidity

of the blood in normal pregnancy. His work, reported in 1916, and since then confirmed by others, shows that there commonly exists in normal pregnancy an acidosis, as shown by the tension of the carbon dioxid of the blood in the method of Van Slyke, yet that the blood readings of the majority of our vomiting series fell within the same range as cases considered clinically as normal. A smaller number of cases presented readings at the other end of the scale, reading as high normal, whether as a result of medication (alkalis) or not, we do not know. Our investigation of the total nonprotein nitrogen and the urea nitrogen of the blood show normal limits for all cases.

URINARY AMMONIA IN NORMAL EARLY PREGNANCY

Some years ago, R. W. Webster and myself investigated the partition of the urinary nitrogen in four normal patients, two or three months pregnant, who had not vomited and had only very slight and infrequent nausea. Two were nulliparas and two were multiparas, one of each pair was slight and the other somewhat stout. Both multiparas could be classed as neurotic. The diet was mixed and was calculated for 10 gm. of nitrogen for the two women weighing under 120 pounds and 14 gm. for the two women weighing more than 150 pounds. The urine was followed for three successive days, yet since they present the same range we will record only one. One case in the fifth month of pregnancy was selected for observation and followed from that time throughout, with daily study during the last thirty days. The diet in this case was not controlled. We also have as other controls a urinary investigation in a woman five months pregnant who was threatening abortion, and two observations on an early pregnancy complicated by a duodenal ulcer which had long caused vomiting.

TABLE 1.—CONTROLS FOR VOMITING OF PREGNANCY, NORMAL EARLY PREGNANCY

	Case 1, Primipara, 2/12/12, 640 c.c., 1.032 Specific Gravity, 25 degrees Acidity		Case 2, Primipara, 1/31/12, 925 c.c., 1.025 Specific Gravity, 32 degrees Acidity	
	Gm.	Per Cent.	Gm.	Per Cent.
Nitrogen	7.8	.....	12.184	.....
Urea	14.08	84.29	22.99	88.1
Ammonia	0.695	7.02	0.564	3.81
Uric acid	0.523	2.23	0.7314	2.0
Creatinin	1.037	4.94	1.316	4.0
Amido-acid	0.363	0.87	0.561	0.87
Undetermined	.....	0.65	.....	1.2

	Case 3, Multipara, 2/1/12, 860 c.c., 1.022 Specific Gravity, 24 degrees Acidity, Trace Indican		Case 4, Multipara, 2/7/12, 2,160 c.c., 1.012 Specific Gravity, 18 degrees Acidity, Trace Indican	
	Gm.	Per Cent.	Gm.	Per Cent.
Nitrogen	8.723	.....	11.19	.....
Urea	16.25	86.9	19.44	81.1
Ammonia	0.644	6.08	0.72	5.29
Uric acid	0.563	1.92	0.92	2.74
Creatinin	0.819	3.49	1.75	6.72
Amido-acid	0.429	0.92	0.884	1.47
Undetermined	.....	0.60	.....	2.65

RANGE OF URINARY AMMONIA IN SEVERE VOMITING OF PREGNANCY

From the foregoing it is evident that the case as presented by Williams stands or falls with the ammonia content of the fatal cases, or those aborted at the eleventh hour to avoid impending death. Personally, in more than forty examinations of cases which R. W. Webster and myself, or I myself, or my technician working with me, have made, I have never seen a patient adjudged by clinical means as in danger of life with urinary ammonia of normal limits. The fact that high ammonia is occasionally seen in cases that do not give symptoms of marked toxicity in no way impairs the truth of the general statement, since the loss of fatty tissues, the glycogen content of the liver and muscles, the character of the food retained, the type of medication employed, all constitute factors that must be considered in any given case. We have found a total nitrogen range from 3.6 gm. to 8 gm., and an ammonia variation between 1.8 and 3.1 gm. in twenty cases of the severe type of vomiting. Lower ammonia readings were found in a considerable number of patients who, although they stated that they had had constant vomiting before our study, did not vomit to any considerable extent while under our observation and treatment. One patient with a fairly severe, long protracted and stubborn type showed a rather low range of ammonia (about 1.5 gm.) and finally aborted two months after our first observations. One very severe case in which abortion was induced because of unfavorable symptoms presented 1.8 gm. of ammonia and 4.4 gm. of nitrogen just before the abortion. The history stated that she had been ill for more than two months and had retained no food for more than a week (the latter statement we consider somewhat doubtful). The urine contained much acetone and diacetic acid, a faint trace of albumin and many granular casts; leucin and tyrosin were found without effort made to concentrate the bulk. The toxic features of this case were further suggested in that, while the vomiting ceased after the abortion done under local and analgesic nitrous oxid-oxygen, death following an acute paralysis of the Landry type, complicated by Korsakoff's syndrome, occurred three weeks later.

TABLE 2.—NORMAL PREGNANCY, LAST HALF OF PREGNANCY

	6/26/11	8/4	10/10	11/9	11/29	12/12	12/27	1/4/12
Total N.	9.12	12.3	10.95	11.04	11.19	11.15	11.03	12.06
Urea	16.5	22.4	19.5	20.01	19.4	19.8	20.4	22.4
Ammonia	0.25	0.73	0.54	0.30	0.72	0.89	0.53	0.54
Uric acid	....	....	0.79	0.77	0.92	0.88	0.85	0.55
Creatinin	....	....	1.58	1.56	1.75	1.76	1.49	1.58
Amido-acids	....	....	2.17	2.73	0.89	0.27	0.57	0.43
Chlorids, NaCl	....	....	....	....	....	....	....	14.78

TABLE 3.—FIVE MONTHS' PREGNANCY THREATENING ABORTION

Day	Fluid Intake, C.c.	Urine, C.c.	Total N, Gm.	Urea N, Gm.	Ammonia N, Gm.	Creatinin, Gm.	N in Diet, Gm.
1	1,000	800	5.27	4.36	0.45	0.88	10.9
2	1,050	650	6.82	5.24	0.36	0.52	6.9
3	750	1,190	8.33	5.98	0.61	0.78	12.3
4	1,200	830	3.71	3.18	0.21	0.22	8.1
5	Aborted spontaneously						

TABLE 4.—VOMITING FROM DUODENAL ULCER WHEN THREE MONTHS PREGNANT

Nitrogen	4.18 gm.
Ammonia	0.450
After one week's interval and treatment:	
Blood carbonates	46.0
Ammonia	0.21

Subsequent Admission 2 Years Later, 3 Months Pregnant

Fluid Output	Ammonia	Urea	Creatinin	Total N.	N. Consumed
900	0.19	3.04	0.48	4.48	
2,450	0.49	3.96	0.56	5.21	
610	0.10	3.38	0.57	4.38	6.6
1,150	0.16	2.96	0.58	4.41	6.6
730	0.09	1.66	0.47	2.96*	6.6
1,000	0.16	2.97	0.54	4.76	6.6
1,110	0.15	4.20	0.48	5.96	7.6

* One specimen lost.

URINARY AMMONIA IN STARVATION

The question now arises as to whether this increased ammonia is indicative merely of the acidosis of starvation as suggested by Underhill. No student of the metabolism in cases of pernicious vomiting can doubt for a moment that starvation enters largely into the picture, but I cannot see how any can believe that it is responsible for the entire change, since the ranges of ammonia seen in actual starvation are greatly exceeded by those encountered in the vomitings. The absolute amounts of ammonia nitrogen excreted in Bonniger and Mohrs' fasting woman Schenk ranged from 0.40 gm. on the second day to a maximum of 1.84 gm. on the seventh day of the fast. Benedict's subject L. gave similar findings, 0.41 gm. on the first day with a maximum of 1.94 gm. on the seventeenth day, an amount in excess of that of Beauté in Cathcart's research and of Brugsch on Succi. The maximum ammonia coefficient in Benedict's fasting case is 21.79 per cent.; in Williams' vomiting case, 46 per cent. The rapid fall in the ammonia in Benedict's subject after taking food is of the greatest interest (from 1.24 to 0.69 gm. on breaking a fast of thirty-one days). Yet these observations are made on individuals who are about on their feet. On the other hand, you quite commonly encounter ammonia nitrogen of more than 2.4 gm. in vomiting cases in which the patients have been in bed for days and who have retained some food by mouth to say nothing of glucose by blood or by rectum. Moreover, the total nitrogen often falls below that encountered in any record in starvation, excepting only Freunds observations of Succi which are not acceptable to later workers. It is unfortunate that no professional faster has been content to present for study while on a nitrogen-free diet, which would give another angle for comparison, much needed for complete controls.

So it appears as follows: There is an acidosis in pregnancy as evidenced by the reading of the carbon dioxid tension of the blood, yet the tension of the vomiting cases does not exceed that of normal cases in which there is no vomiting. The ammonia nitrogen of our normal pregnant controls ranges around 0.5 gm. In vomiting from ulcer in pregnancy it also ranges low, whereas in vomiting cases it exceeds that noted in any series of actual fasting.

Finally, therefore, it appears that the crux of the question lies in the point as to whether in a vomiting case presenting ammonia nitrogen in excess of that seen after many days of actual fasting there is a return to normal limits with the cure of the vomiting and the preservation of pregnancy. Williams' observations show that it does so after abortion. My observations indicate that it does so return after proper treatment and with the preservation of pregnancy, as evinced by the typical case summarized in Table 5.

The simpler nausea and vomiting cases in early pregnancy correspond in large part to the clinical picture of the so-called neuroses of the stomach. We may encounter all types. The most common one suggests the hyperacidity group in that the vomiting ordinarily occurs at the height of digestion. Almost invariably they are relieved temporarily by taking food. The mouth is acid to litmus. The eructations are acid. Constipation is the rule, almost without exception.

CYCLES OF VOMITING

There are usually three periods in which the nausea is most marked. The most common period is the early morning; the second is late in the afternoon, and the third is shortly before noon. At first the patient conforms to one type alone, but later she may vomit at all three periods, and subsequently after meals as well. Gastric analysis shows increase of acids. Motor neuroses are common. The patient is worse in the morning because of the long fast during the night, although the stomach usually empties itself in a normal manner during this interval, so that the morning vomitus is chiefly acid mucus. Yet occasionally the pylorus becomes so irritated by the acid secretions during the night fast as to close in spasms with retention of larger amounts of the offending fluids, which are vomited shortly after arising. Vomiting may also occur immediately after taking food. The nausea in the late afternoon is common in patients who eat a scanty pickup luncheon, often most badly selected. The type of patient whose usual breakfast is coffee and rolls gives a wave of nausea about eleven in the morning.

TABLE 5.—PERNICIOUS VOMITING; TEN WEEKS' PREGNANCY; RETURN TO NORMAL URINARY METABOLISM AFTER TREATMENT

	Jan. 13, 1912, vomited 12 times, 580 c.c. turbid urine, 1.026 specific gravity, trace nucleo-albumin, a few hyaline casts, much acetone, considerable indican, no lactic		Jan. 16, vomited 4 times, 630 c.c. turbid urine, 1.026 specific gravity, no albumins, no casts, much acetone, considerable indican	
	Gm.	Per Cent.	Gm.	Per Cent.
Nitrogen	5.84	.....	9.83	.....
Urea	12.24	71.0	15.92	75.6
Ammonia	1.67	22.6	2.38	19.96
Uric acid	0.042	1.39	0.033	0.11
Creatinin	0.048	1.77	0.514	1.94
Amido-acids	0.434	1.38	0.848	1.61
Undetermined	.....	0.88	.....	0.73
	Jan. 17, vomited 2 times, 610 c.c. very turbid urine, sp. gr. 1.029, no albumins, no casts, large excess indican, much acetone, no lactic		Jan. 21, did not vomit, 450 c.c. very turbid urine, specific gravity 1.022, no albumins, no casts, slight excess indican, strongly + acetones	
	Gm.	Per Cent.	Gm.	Per Cent.
Nitrogen	10.63	.....	6.14	.....
Urea	16.83	73.9	10.18	77.4
Ammonia	2.47	19.15	1.25	16.75
Uric acid	0.293	0.91	0.05	0.27
Creatinin	0.617	3.81	0.607	3.67
Amido-acids	0.495	0.87	0.273	0.83
Undetermined	.....	1.33	.....	1.06
	Jan. 24, 580 c.c. turbid urine, specific gravity 1.024, no albumin nor casts, trace indican, slight acetones			
	Gm.	Per Cent.		
Nitrogen	4.68	....		
Urea	8.537	85.3		
Ammonia	0.375	6.43		
Uric acid	0.2566	1.82		
Creatinin	0.552	4.38		
Amido-acids	0.304	1.21		
Undetermined	.....	0.91		

Yet all cases do not belong to this category and the subacidity type is not uncommon. Indeed, the most troublesome cases are often in this group, which often present as primary and without an acid mouth or increased stomach acidity. Yet it would appear that cases which sometimes begin as hyperacid types may change to the subacid type after long standing.

TREATMENT

The successful treatment demands a most rigid attention to details and no item is too slight to merit attention. I cannot urge too strongly a careful study of the gastric secretions and titration of all vomitus. Nothing seems more ridiculous than to pass all patients

by with the statement that a pregnant woman must expect to vomit.

It follows without question that we should search with the greatest care for any of the conditions which texts mention as causal factors. Posterior displacements should be corrected and held up by pessaries, although I have never seen relief follow such measures alone. The care of the bowels is exceedingly important and there is much opportunity for skill in the treatment of the troublesome constipation, since cathartics are not usually well borne. We should restrict medication by mouth to the few drugs later mentioned. There is, of course, no need of emphasizing the necessity of proper hygiene, well constructed clothing, proper ventilation and the avoidance of excitement.

VOMITING AS A NERVOUS HABIT

I am of the firm belief that the formation of a nervous habit of vomiting accounts for the great majority of the cases of moderate severity which develop from morning sickness, since there is nothing more easy to acquire than the habit of vomiting in the presence of nausea. We should seek, therefore, to break this habit and to treat, at the same time, the underlying cause of hyperacidity or subacidity, in part by medicine but chiefly by a type of food which, while easy to digest, is difficult to vomit. We must not expect to secure good results unless there is absolute rest and quiet. Hospital care is most advisable and a stay of more than ten days is rarely necessary. It is most difficult to treat successfully a patient surrounded by her family and with the weight of household cares even though she is in bed and under a nurse's care. A good start is necessary and it is seldom obtained while the patient is at home.

The patient is put to bed. All food and drink by mouth is stopped until there has been no vomiting for twenty-four hours. The bowels are kept open by a daily high colonic flushing. The patient is put under the influence of large doses of bromid given by rectum, beginning with 40 to 60 grains every four hours. A solution of glucose and soda is given by rectum. We have long since found that these are best given in doses of 8 to 10 ounces at fixed intervals since the drip method soon causes irritation. It is exceedingly important to assure the patient that she will retain the first meal given, to explain the plan of treatment, and to warn her against vomiting when she is nauseated. It should be explained that the vomiting habit is very easy to form, but very difficult to break.

The type of food varies within limits yet at no time should it include fruits or sweets. It is necessary that it should be given as dry as possible and the meal should be of the solid type. The hyperacidity group responds quickly to a diet of proteins, limited fats and restricted carbohydrates. The glucose by rectum supplies the deficiency of the carbohydrates, while the sodium bicarbonate is used to neutralize the acidosis. I have found nothing as useful as the diet of meats, twice toasted bread with butter, and a small amount of milk and cream, to be taken as a ration, all or none. A patient should begin with at least four such meals a day. Fluids by mouth are withheld for many days and until the diet has been extended to include vegetables. Then we may give alternatively solid and fluid meals—in small amounts and at frequent intervals.

There are many objections to this type of diet which quickly palls because of the restricted choice of meats, since broiled steak, roast beef and slightly cooked scraped beef must constitute the standby for several days. Yet a patient will usually take it until the most distressing time has passed, when other meats may be added. The diet for the subacid type is far more difficult and should be more mixed with fewer meats. The bromids are now gradually reduced and soda and magnesia are given in capsules by mouth during the period of digestion. With the exception of occasional pills, given with meals, I have found no other drug of the slightest value except ingluvin.

It seems most remarkable to me that so little attention has been paid to the diet. Nearly all texts advise milk and other fluids which are not only easy to vomit but which react occasionally in a somewhat toxic manner, a point recently emphasized by Tweedy of the Rotunda. The chief qualification is that the food shall be solid, dry and in small amounts. Years ago I was impressed by the manner in which a steward on an Atlantic liner treated seasickness in a fellow passenger. For the first meal he gave a chop. "It will stay down," he said, "one vomits liquids easily."

Patients invariably suffer from a parched mouth and demand acid drinks. They clamor for drinks of lemon and orange, yet some very sharp mouth wash helps out wonderfully. The sweeter type of mouth wash usually nauseates. I cannot emphasize too strongly the necessity for the most careful observation of details. A nurse may give a low enema instead of a colonic flushing. Some one invariably brings grapefruit which promptly causes vomiting. The patient is so thirsty that she will drink the water from the finger bowl or reject the solid food and take only the milk and cream. One must obtain the patient's confidence. Yet this treatment rarely fails when properly controlled in chronic cases. It should not be attempted with the fulminating type of case nor with one with black vomit or other signs of toxemia. These should be aborted without delay and very often one is too late. Gastric lavage is seldom helpful as an adjuvant to the treatment.

The question naturally arises as to what constitutes a safe limit of urinary ammonia. We cannot answer. Yet it seems rational to treat the acidosis as well as the actual vomiting when the ammonia runs very high and to induce abortion in the presence of unfavorable symptoms. We should constantly keep in mind the resemblance to the ammonia excretion in diabetes. Ringer's solution gives excellent results given alternately with the glucose-soda solution since it does more to quench the thirst and is most valuable in the treatment. I have had no results with injections of normal pregnant serum, as advocated by Freund and others, in any case which did not respond to our treatment. There is some doubt as to the basis for the injection of normal pregnant serum. Many claim that it depends chiefly on the blood content of calcium. Epinephrin has not proved of value in my hands nor has corpus luteum. With an acidosis not influenced by the treatment and with a continuance of severe symptoms, we should resort to abortion. More latitude may be given a case of equal clinical severity that does not present marked acidosis. We should aim in the beginning to keep on the safe side. To this extent, I believe we should rely on the study of urinary ammonia.

It may be urged that ammonia determinations are complicated procedures which in consequence must be done by a trained chemist. Yet the newer methods of Folin and Van Slyke have done much to solve this

problem. Hospital interns are now taught them as a routine and even if they are not so taught a case may be controlled by titrations with formaldehyd solution, which are sufficiently accurate for clinical purposes and easy to do.

THE METHOD OF ABORTION

The method of abortion is entitled to the most serious consideration if that treatment is finally chosen, since there is little doubt that it occasionally causes death in very serious cases, partially because of the shock following ill chosen methods but largely because of the drug used for anesthesia. No one who has followed the work of Whipple, Graham and others on chloroform poisonings can conclude other than that chloroform has been responsible for many of the lesions in many of the cases of the acute yellow atrophy type, not necessarily as a primary cause but certainly as contributory. Chloroform is absolutely contraindicated in any case in which it would appear that the liver has used up most of its glycogen. It will certainly cause serious damage to a liver already the seat of a pathologic process. Ether is objectionable, partially because of the acidosis which its use entails but chiefly because it adds to the vomiting. Local anesthesia suffices for nearly all necessary procedures. It may be augmented by nitrous oxid and oxygen in analgesic doses, never given to the anesthetic degree. The greatest care should be taken to keep the patient in the twilight stage and not to permit loss of consciousness. The method of procedure is equally important and deserves the most careful consideration since the patient may have advanced so far in pregnancy that you may not remove the fetus through the dilatation obtained by Hegar catheters. Vaginal hysterotomy may then be indicated, especially if the cervix is long and high. Yet we must keep in mind the possibility of infection since the resistance of the patient is usually so low. Bags may be used, yet they, like packing, often augment the symptoms of many cases. Do everything possible to avoid catheterization, since bladder infection and pyelitis may be the source of an infection responsible for the severest type of neuritis.

Few conditions, therefore, may offer more opportunity for proper treatment. Yet, so long as both the medical profession and the laity alike believe that a pregnant woman must expect to endure nausea and vomiting, we may expect to give treatment in serious cases.

ABSTRACT OF DISCUSSION

Dr. Alfred Baker Spalding, San Francisco: It is hard to discuss this paper because we know so little about the etiology and we have so many personal opinions about treatment. We know that every woman who becomes pregnant is more or less toxic. We know that about 60 per cent. start to vomit from reverse peristalsis, beginning with constipation and ending in vomiting. Two tenths of 1 per cent. will have serious vomiting. Occasionally a woman dies. I have seen one death. It is unusual to see a woman die from this condition. Why do these women vomit, and why do they become seriously ill, and why do they die? All we know in regard to the pregnancy is that there is a foreign element developing in the ovum against which the body reacts producing symptoms in some persons but not in others. Autosuggestion has an influence, for in some cases even the husband starts to vomit. I do not believe all women are in the same condition for pregnancy. Some women are well and strong, and I believe much in the rôle of focal infections in the pregnant woman. I am convinced that the teeth form the basis of many of the abnormalities seen in pregnancy, particularly in regard to vomiting and in regard to the high blood pressure and other toxic conditions of later pregnancy. In the record of fatal cases reported by J. Whitridge Williams some years ago I saw that one patient just before death had had a severe tonsillitis. In another case the patient was found at necropsy to have had an ulcer of the vagina. A patient of my own, who in three pregnancies had vomited excessively, has had severe gonorrheal inflammation because her husband would not be cured. An interesting point in this case is that with the cautery I have cleaned up the cervix so that it looks like the cercix of a woman who never had a child. It is now about the fifth month of pregnancy and the woman has not vomited once. This leads me to believe that some of the cases are due to focal infection. As to the urinary nitrogen, in one case during the period of treatment from July 22 to August 12, the total amount of urine was a little under the normal until we aborted the patient. The nitrogen started at 6 gm. but dropped until the day before we aborted her to 2 gm. An interesting fact in this case was that the nitrogen coefficient increased from 10 to 37 per cent., while the patient clinically was very sick. This brings out Williams' idea and we based our treatment on the report of his cases. There is great need for some functional test of the liver. Unfortunately, the liver may be largely destroyed and yet functionate. In this particular case we tried the test for urobilin and urobilinogen. Two examinations were made. One of these was made early and showed only slightly increased urobilin in the urine. The day before we aborted her urobilin was present in the urine to the thirteenth dilution.

Dr. Elnora C. Folkmar, Washington, D. C.: I wish to call attention to the fact that we may sometimes make use of other means than drugs and diet or treatment by abortion to relieve the patient of these distressing symptoms. Within the past year I have had six cases of nausea of pregnancy. Three of these cases had reached the point at which I felt it was wise to place them in a hospital and have laboratory tests made, but before doing so I tried the use of body radiation with actinic rays, making approximately ten treatments on ten successive days. In each case the vomiting ceased within the ten days and the patient felt perfectly well. Just how this was brought about we did not know. The study of the effect of light on metabolism is not fully known. We do know that the application of the actinic rays in some way brought metabolism to nearly a normal condition. We know that the rays increase oxidization.

Dr. Frank W. Lynch, San Francisco: I should like to emphasize a few points concerning the use of ammonia in selecting cases for medical treatment. While we do not believe for a moment that the urinary ammonia is the best indication of the extent of the acidosis, we have found it to be a better clinical guide than the carbon dioxid tension of the blood. We have not yet studied a series of cases controlled by the study of alveolar air. The ammonia nitrogen in the urine does not appear to be so quickly influenced by treatment with soda bicarbonate as the carbon dioxid blood tension, and nearly all cases presenting for treatment have had large doses of soda. Many of our cases which have had soda treatment have had high normal (60) carbon dioxid tension and yet their urinary ammonia has been greatly in excesse of that deemed the highest normal limit. The carbon dioxid blood tension quite naturally varies, depending on the condition of the body cells and the fluids which come from around them to form blood plasma. If the acidosis as expressed by the urinary ammonia appears to be controlled, we will persist longer in our treatment in spite of the vomiting than if the ammonia ran extremely high with equally bad clinical symptoms. Yet under no circumstances would we continue medical treatment if the patient had the so-called black vomit. There are no cases accepted by students of metabolism in which the total urinary nitrogen in actual fasting has fallen below 3 gm. The case of Succi investigated by the Freunds nearly twenty years ago in Vienna is not now accepted since the methods then used were not possibly so accurate as at the present. Yet in many of

our cases as in that of Dr. Spalding we have found lower total urinary nitrogen than any observation in actual fasting. We are somewhat skeptic of these observations. Yet it appears that we should not expect to have as much breakdown of protein tissue when we use tissue sparing food, which nearly all vomiting cases retain by rectum, as in cases of actual fasting. We do not know, however, to what extent the condition causing vomiting may break down protein material, whether more than in actual fasting, as seems likely, or not. It is unfortunate that we have no good records as controls of partial fastings where glucose or some other carbohydrate was used for food since all fasters appear to object to such form of diet, preferring actual fasting. We no longer give glucose into the vein since we find that patients absorb it very well through the bowel.

INFECTIONS OF WOUNDS OF WAR

WITH SPECIAL REFERENCE TO GAS GANGRENE

ROSWELL T. PETTIT, M.D.
Captain, M. C., U. S. Army
OTTAWA, ILL.

The work which forms the basis of this paper was done in the transportable laboratory assigned to evacuation hospital No. 8 during the St. Mihiel and Argonne-Meuse operations. An effort was made to obtain information of a clinical character, such as that relating to the time between the injury to the patient and the operation; exposure to wet and cold; influence of shock and exsanguination; character of wounds—whether produced by shell fragments or rifle bullets; removal or retention of foreign bodies; impairment of local circulation; involvement of bone; character of the soil over which the fighting occurred, and, lastly, the nature and the influence of operative interference.

Along bacteriologic lines, a special effort was made to secure the more important anaerobes, such as *B. welchii, Vibrion septique, B. oedematiens* and *B. sporogenes.* The hemolytic and nonhemolytic varieties of streptococci were studied in cases in which gangrene had developed and in those in which it developed later, and also in the cases showing no evidence of gas gangrene at any time. Familiarity with the work done in evacuation hospitals teaches that much of this information cannot be collected during periods of great activity; the rush is so great that it is impracticable to take more than a few condensed notes.

During the month of October it frequently happened that more than 200 patients were operated on under a general anesthetic within twenty-four hours. On a number of occasions, with eighteen tables in the operating theater, manned by twelve surgical teams operating in two shifts (day and night), more than 150 patients at one time awaited operation in the reception ward. Clinical data could not well be gathered, and similar difficulties were encountered in securing bacteriologic data. In a number of instances, fifty cultural examinations were made within twenty-four hours. In the majority of instances, the isolation and study of pure cultures of the various bacteria was not attempted. All cultures were made on four types of mediums under aerobic and anaerobic conditions. Examinations for morphology and motility were made in each case; and, for the purpose intended, the results are fairly exact—determining the presence of hemolytic streptococci and *B. welchii.* Other anaerobes were classified together as "unidentified anaerobes."

Between Sept. 10 and Nov. 13, 1918, 4,471 surgical cases were admitted to the hospital. Of this number 4,377 patients received wounds in action, of which 2,993 were single and 1,387 multiple. The total number of wounds in all cases was 6,207 and 4,683 were treated surgically. They were distributed as shown in Table 1.

TABLE 1.—DISTRIBUTION OF WOUNDS

Scalp	102	Abdominal wall	27
Brain	100	Abdomen	54
Face (including eyes)	207	Buttocks	229
Neck	84	Hip	82
Shoulder	60	Thighs	899
Axilla	15	Popliteal space	15
Arm	420	Knees	231
Elbow	68	Legs	699
Forearm	229	Ankles	77
Wrist	46	Foot	205
Hand	250	Heel	9
Fingers	155	Toes	48
Chest wall	132	Scrotum	31
Chest	119	Testicles	8
Flank	28	Penis	11
Back	156	Perineum	3
Total			4,683

In 206 of the 4,377 cases in which wounds were received in action, amputation was necessary, the determining factors being (*a*) severity of injury, (*b*) streptococcus infection, or (*c*) gas gangrene. Table 2 shows that most amputations of a minor nature were due to the severity of injury. Amputation of a limb was most frequently made necessary by gas gangrene.

TABLE 2.—AMPUTATIONS AND THEIR CAUSE

Part of Body	Total Number	For Severity of Injury		For Simple Infection		For Gas Gangrene	
		No.	Per Cent.	No.	Per Cent.	No.	Per Cent.
Arms	31	9	29.0	1	3.20	21	67.7
Forearms	16	11	68.7	1	6.25	4	25.0
Fingers	44	42	95.6	1	2.20	1	2.2
Thighs	60	5	8.33	10	16.60	45	75.0
Legs	38	12	31.5	4	10.6	22	57.8
Feet	6	4	66.6	0	0.0	2	33.3
Toes	11	10	90.9	0	0.0	1	9.1
Total	206	93	45.1	17	8.25	96	46.6

In the period from Sept. 10 to Nov. 13, 1918, there were 363 deaths in the hospital. The more important causes are given in Table 3. Gas gangrene was a most important cause of death. Of 4,377 patients who were wounded in action, 221 had gangrene (5 per cent.). This is a high incidence, but it is to be noted that this hospital received only those seriously wounded, and

TABLE 3.—CAUSE OF DEATH IN THREE HUNDRED AND SIXTY-THREE CASES FROM SEPT. 10 TO NOV. 13, 1918

Cause of Death	Number	Per Cent.
Gas gangrene	61	17.0
Simple infection	7	2.0
Shock and hemorrhage	88	24.2
Chest wounds	53	15.0
Abdominal wounds	47	10.2
Head injuries	50	14.0
Spinal injuries	12	3.3
Multiple wounds	30	8.3
Pneumonia	9	2.5
Poison gas	6	2.0

most of the cases of gangrene were received very late. Of 157 cases of gangrene in which a definite record could be obtained, there was well developed gas gangrene in 141 on admission to the hospital (90 per cent.). In sixteen cases gas gangrene developed after the patients had been operated on. A sharp contrast is noted between the incidence of gas gangrene devel-

oping after operation (sixteen out of 157 cases) and that of gangrene well developed on admission (141 out of 157 cases).

The average length of time between injury and operation in 162 cases of gangrene was 41.8 hours. In 349 similar severely wounded, nontransportable cases, in which gas gangrene did not develop, the average length of time between injury and operation was 24.67 hours. These figures reveal the importance of early operation in preventing gas gangrene.

Dividing the 162 patients with gangrene into groups, with the division based on the time interval between injury and operation, the number who fall in each group can be determined. The same can be done with the 349 similar cases not showing gas gangrene (Table 4). From these figures the percentage incidence of gangrene in each group can be determined: for example, of forty-six cases received between 48 and 60 hours after injury, twenty-three (or 50 per cent.) had gangrene. These figures are represented graphically in the accompanying chart. The obvious deduction from these figures is that early surgical interference is one of the most important factors in preventing the development of gas gangrene.

TABLE 4.—TIME INTERVAL IN RELATION TO DEVELOPMENT OF GANGRENE

Time Interval between Injury and Operation	With Gangrene	Without Gangrene	Total
Received at hospital between:			
0 - 6 hours	0	0	0
6 - 12 hours	12	80	92
12 - 18 hours	15	90	105
18 - 24 hours	27	55	82
24 - 36 hours	30	56	86
36 - 48 hours	20	17	37
48 - 60 hours	23	23	46
60 - 72 hours	9	9	18
72 - 96 hours	9	10	19
96 - 120 hours	11	7	18
120 - plus	6	2	8
Totals	162	340	511

In the majority of instances, the heavily muscled parts of the body are most frequently involved. One third of the cases in this series occurred in the leg. The distribution is indicated in Table 5.

TABLE 5.—WHERE GAS GANGRENE DEVELOPED

Site	No.	Site	No.
Scalp	0	Back	3
Brain	0	Buttocks	17
Neck	0	Thigh	54
Shoulder	10	Popliteal space	3
Axilla	1	Leg	76
Arm	35	Ankle	0
Forearm	9	Foot	7
Hand	3	Heel	0
Fingers	0	Toes	1
Chest wall	2		
Chest	?	Total	221
Flank	0		

The total number of wounds treated surgically was 4,863. The incidence of gangrene is shown in Table 6. The highest incidence is seen to be in wounds of the shoulder and of the leg and, in the order named, in the arm, buttocks and thigh.

There was impaired circulation in 174 cases in which a record concerning this point could be obtained from the operation notes. Of these cases, gas gangrene developed in thirty. In this group there was extensive destruction of important blood vessels in 17.8 per cent. Fractures of the large bones occurred in seventy-two of the 174 cases.

As transportable patients were evacuated within forty-eight hours after operation, bacteriologic examinations were restricted to cases in which the patient could not be removed. They were principally those of injuries of the head, chest and abdomen, and fractures of the long bones; also those of gangrene. Cases of this character were under observation in the hospital for from four days to two weeks. Bacteriologic examinations were made as shown in Table 7.

TABLE 6.—INCIDENCE OF GANGRENE IN THE VARIOUS PARTS OF THE BODY

Part of Body	No. of Wounds	No. of Cases of Gangrene	Percentage Incidence of Gangrene
Scalp	102	0	0
Brain	100	0	0
Face (including eyes)	207	0	0
Neck	84	0	0
Shoulder	60	10	16.7
Axilla	15	1	6.6
Arm	420	35	8.3
Elbow	68	0	0
Forearm	229	9	3.9
Wrist	46	0	0
Hand	250	3	1.2
Fingers	155	0	0
Chest wall	132	2	1.5
Chest	119	?	?
Flank	28	0	0
Back	156	3	1.9
Abdominal wall	27	0	0
Abdomen	54	0	0
Buttocks	229	17	7.4
Hips	82	0	0
Thigh	889	54	6.1
Knee (popliteal space)	246	3	1.2
Leg	609	76	12.5
Ankle	77	0	0
Foot	205	7	3.4
Heel	9	0	0
Toes	48	1	2.1
Scrotum	51	0	0
Testicle	8	0	0
Penis	11	0	0
Perineum	3	0	0
Total	4,083	221	

PROCEDURES EMPLOYED

Cotton swabs on wire rods in small test tubes were sterilized by dry heat at 170 C. for one hour. They were prepared by the laboratory and placed in the operating room and wards. Six assitants were assigned to the day and night shift in the operating room (three to each shift). Their duties were to write the clinical records of the operations, take the cultures, unless the surgeons took them themselves, and to make out the clinical portion of the bacteriologic record chart.

TABLE 7.—NUMBER AND TIME OF BACTERIOLOGIC EXAMINATIONS

Total number of wounded		684
Single	560	
Multiple	124	
Total number of wounds		869
Total number of cultures		929
Before operation	341	
During operation	324	
At completion of operation	167	
Subsequent to operation	97	

These swabs in their tubes were sent to the laboratory and planted in liver peptone water. At the end of from six to eight hours a microscopic examination was made of a fresh specimen for motility, and of a stained specimen for chains of cocci and for bacilli. Subcultures, in all instances, were made in litmus milk, Veillon agar and on blood agar slants. The cultures were examined at the end of from eighteen to twenty-four hours, as follows:

Liver peptone water.—Microscopic examination of all cultures negative on six-hour examination, and notation made of the amount and character of cloudiness, sediment, pellicle and odor.

Blood agar.—Examination to determine the presence or absence of hemolytic pinpoint colonies, and the character and extent of surface growth and odor.

Litmus milk.—Examination to determine acidity and gas production.

Veillon agar.—Examination to determine the size, number and character of colonies (naked eye, hand lens and microscopic 200 X), and the gas production.

All mediums except blood agar plates and slants were boiled and cooled immediately before use, and calcium sulphid was added to the milk and the liver peptone water just before they were employed, and to the Veillon agar immediately after it had cooled.

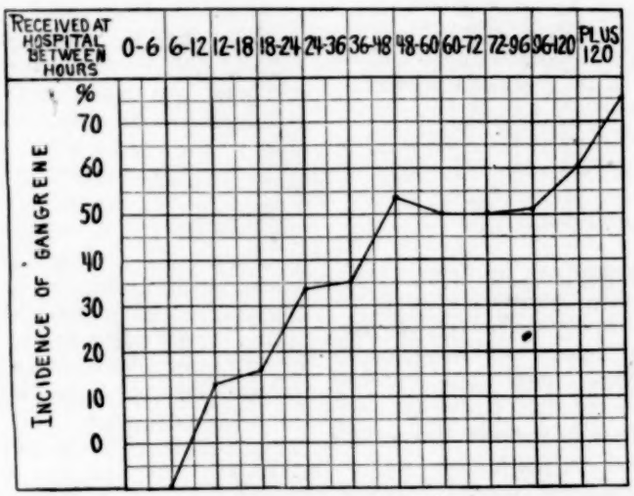
In some instances more detailed examinations of pure cultures were made, but the majority of examinations were made as outlined above.

RESULTS OF THE EXAMINATIONS

Of 890 wounds examined bacteriologically, 478, or 53 per cent., were found to contain anaerobic bacilli.

Of these 478 wounds, 321, or 67 per cent., at no time showed clinical evidence of gas infection.

Of the remainder—the gas gangrene cases—in sixteen, or 3 per cent., gas gangrene developed after operation (débridement), while in 141 cases, or 29 per cent., gas gangrene was clinically evident at the time the bacteriologic examination was made.



Incidence of gas gangrene in relation to time interval between injury and operation: total number of patients with gangrene, 162; patients without gangrene, 349. This chart demonstrates that after eighteen hours the percentage incidence of gas gangrene in the severely wounded and nontransportable patients increases markedly.

It is thus seen that, in my experience at least, more than two thirds of the wounds contaminated with anaerobes did not develop gangrene. All of these cases were under observation at least five days, and some of them more than two weeks.

In only a very small percentage of cases did gangrene develop after operation. One hundred and fifty-seven cases of gas gangrene were examined bacteriologically. In eighteen of these cases the cultures were taken at a distance from the wound, from incisions above the wound and from the amputation stump. In 139 cases in which cultures were taken directly from the wounds, the relation of *B. welchii* to the other anaerobes in cases of gas gangrene clinically determined was as follows:

B. welchii was the only anaerobe found in twenty cases, or 14 per cent.

B. welchii was absent, but other anaerobes were found on culture in thirty cases, or 21 per cent.

B. welchii and other anaerobes were found together in eighty-nine cases, or 65 per cent. A combination of *B. welchii* with other anaerobes was thus found in two thirds of the cases examined.

A statistical study of the relative frequency of the streptococcus, both hemolytic and nonhemolytic, was made in cases free from gangrene, and in cases in which gas gangrene was clinically evident.

Of all the wounds examined (890), chain forming cocci were found in 219, or 24.6 per cent.

One third of these (seventy-three strains) were of the hemolytic variety, and two thirds (146 strains) were of the nonhemolytic varieties.

In 139 cases of clinically determined gangrene, streptococci (both hemolytic and nonhemolytic varieties) were found, together with anaerobes, in forty-four cases, or 31.6 per cent.

In fourteen cases out of these forty-four, or in 32 per cent., the streptococci were of the hemolytic variety.

In 321 cases without gangrene, streptococci and anaerobes were found together in ninety-seven cases, or 30 per cent. In thirty of these ninety-seven cases, or in 31 per cent., the streptococci found together with anaerobes were of the hemolytic variety.

These results show that the streptococcus — both hemolytic and nonhemolytic—was no more frequent in gangrenous wounds than in nongangrenous wounds.

CONCLUSIONS

From the results the following deductions are warranted:

1. The most important factor in dealing with gangrene is early operation. This is a matter of transportation.

2. A majority of wounds are contaminated with anaerobic bacteria without the development of gas gangrene.

3. Many cases of gangrene are due to anaerobes other than *B. welchii.*

4. In most cases of gangrene, *B. welchii* is associated with other anaerobic bacteria.

5. The streptococcus (both hemolytic and nonhemolytic) is apparently of little importance in the production of gangrene.

Public Health Nursing.—To those who have followed the development of public health work in this country it becomes more and more evident that much of the progress is due to the introduction of public health nursing as an integral part of public health administration. Unfortunately, a very large number of communities in the United States are still without a public health nursing service. It seems not to be realized that such a service constitutes a well-paying investment. Yet nothing has been more clearly demonstrated. Progressive health administrators who have had experience with public health nursing are unanimous in praise of the results obtained. More than ever before there is great need for additional well-trained workers in this field. It is to be hoped the time is not far distant when every community throughout the United States will enjoy the benefits of a system of public health nursing, for experience has demonstrated that this is an invaluable measure for bringing the work of the health authorities to the people.—*Public Health Reports,* June 6, 1919.

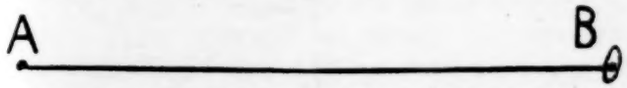
Clinical Notes, Suggestions, and New Instruments

METHOD OF REMOVING VARICOSE VEINS

JOHN A. TAMISIEA, M.D., HOWELL, NEB.

Varicose veins are the cause of the heaviest loss of A 1 men that we encounter in the army. I was attached to the British Expeditionary Forces and was stationed in their Base Hospital No. 25 at Hardelot, France. It was at this hospital that all the "clean" surgery for the Boulogne area was done. In the beginning of the war a soldier who would report sick with varicose veins was usually sent to the base and later transferred to England for operation. As we all know, those poor men had gone through the worst of the war and were eager to keep out of all that they could in the future. It therefore became the duties of the medical officers to find a way to shorten every man's stay in the hospital.

These varicose vein cases were the first that any material speed was shown on. We devised a wire, preferably of silver, such as was used to wire bones, and on one end we put the base of an ordinary 0.303 rifle cartridge. We first filed the sides off and then bored the cap off and ran our silver through the hole and secured it with solder. This wire had to be quite pliable, but not too much so. The other end we beaded over a Bunsen burner. The wire in all was 40 inches long. We would put a tourniquet on the affected thigh and pick up the internal or external saphenous as the case happened to be, and then would make incision over it about 1 inch long, pick up the vein with hemostats, and tie off the lower end of it (distal end). Then we would pick



Wire with one end (*A*) beaded and the other (*B*) fitted with base of cartridge.

up the vein in the thigh by the same incision and tie off the upper end (proximal end). To open the vein up well we applied the hemostats to the edges and held them open while we inserted our wire. We then gently pushed the wire up and followed its course with our hand on the leg. This was usually done from the bottom, as in the pulling up on the wire we would take all the minor tributaries as well as the main vein. When the bead appeared at the higher incision we would grasp it well and have an assistant hold the foot firmly, and pull hard until our wire was entirely out and then we would have the vein gathered up on the wire in its entirety.

Very little if any hemorrhage resulted. We then put a stitch in each incision and an alcohol dressing over it. When our patients awaked they would be moving their legs around and would be greatly disappointed to find that they had no large bandages, no pain, and really no reason for asking to get to "Blighty." These patients were usually sent back to the lines in from ten to fourteen days.

A SIMPLE AND EASY METHOD OF BLOOD TRANSFUSION

ADDISON G. BRENIZER, M.D., CHARLOTTE, N. C.

I have taken my idea of the main piece of my apparatus for blood transfusion from a 10 c.c. ampule, containing sodium citrate in salt solution, issued with a transfusion set to the American Expeditionary Forces in France.

This ampule I have enlarged fifty times, bringing it up to a capacity of 500 c.c. Such an ampule I found commonly used in France for preserving and administering prepared sterile salt solution. I have modified this ampule somewhat, and have added two rubber tubes about 6 inches long, with a glass mouth-piece in one tube and a needle in the other. The apparatus is then complete.

The ampule is made of thick glass, and both ends are drawn out into tubes. One end is left straight and the other is bent into a U curve. The extreme ends are flared slightly, and half an inch from the ends are apparently constricted (Fig. 1 *A*), or the straight lower end may be bent into a right angle curve or even tapered at the extreme end.

One of the rubber tubes is fitted with a short glass tube, blown out in the middle portion to hold a bit of sterile cotton. This serves as a mouth-piece (Fig. 1 *B*).

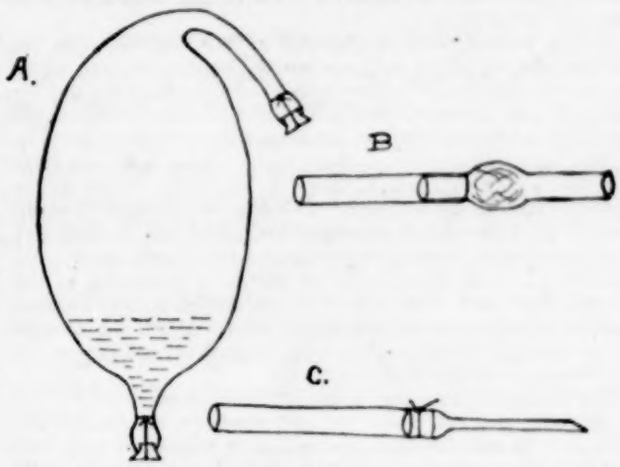


Fig. 1.—*A*, the 500 c.c. ampule containing from 2 to 3.5 gm. of sodium citrate in 50 c.c. of salt solution. The upper end is curved; the lower end is straight; both ends are stoppered with small rubber stoppers, tied in place. *B*, glass mouth-piece filled with sterile cotton in the bulbous portion and fitted into a short piece of rubber tubing. *C*, a short needle of large caliber fitted into a short rubber tube and tied fast.

The other rubber tube is fitted with a short needle of large caliber. The needle is tied in the tube with linen, and a wire is kept in it (Fig. 1 *C*).

Thus equipped, 50 c.c. of salt solution with from 2 to 3.5 gm. of sodium citrate in solution are sucked up into the ampule and the ends stoppered with small rubber corks, tied in (Fig. 1 *A*).

The ampule, along with the rubber tubes with glass mouth-piece and needle, respectively, are rolled in a cloth and sterilized in a constant pressure autoclave, or the different parts of the apparatus, including the salt solution and citrate,

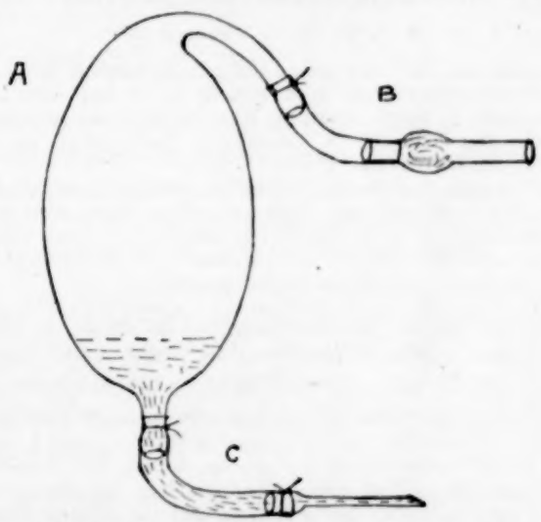


Fig. 2.—The parts *A*, *B*, and *C* assembled and ready for use. The citrate is let down to meet the blood. With the end *B* in the mouth and the end *C* in the vein, there is ample stretch between the two fixed points for shaking the ampule.

may all be simply boiled at the time of the operation, if time is not a factor and it is not desired to keep the apparatus ready sterile on hand or if an autoclave is not available.

By hanging the ampule by its bent upper end on a bandage around the neck, the operator will be given free use of both hands.

The lower straight or even curved lower end is unstoppered, the rubber with needle fitted on and, with the free use of both hands, the donor's vein is needled. The blood begins to flow into the ampule on removing the stopper at the upper end, and may be markedly hastened by putting on the tube with mouth-piece and sucking. As the blood runs into the ampule, it is shaken with the citrate. When filled, the rubber tube at the bottom is pinched and the needle withdrawn from the vein (Fig. 2).

If the rubber tube is clamped at the top, opposite the needle tube, no blood will run out the needle, and the whole apparatus may be left suspended on the bandage around the neck of the operator, thus allowing free use of the hands again to needle the vein of the recipient.

The recipient's vein is needled, the clamp removed from the tube at the top, and the blood is allowed to begin to run into the vein of the recipient. The flow is hastened by blowing through the tube at the upper end. The rate of flow may be controlled by blowing or sucking on the mouth-piece. Any droplet infection or infection by saliva is prevented by the intermediary of a little sterile cotton stuffed into the ampulated middle portion of the mouth-piece. When the ampule is emptied, the lower rubber tube is pinched and the needle withdrawn from the recipient's vein.

The recipient's vein may be needled subcutaneously or when it is collapsed, cut down on and needled; or, finally, the vein may be cut down on, incised, held wide open with two metal crochet needles, and the end of the ampule itself inserted and tied in. (This is the only phase or step of the operation in which an assistant is needed.)

The donor's vein should be needled against the blood stream, that is, toward the hand, and the recipient's vein in the direction of the blood stream, that is, toward the head.

The above described manipulation can be done very quickly; in fact, so quickly that the ampule may be used paraffined or paraffined and washed over with citrate for whole blood. So used, the lower end is not only bent in a right angle curve, but is also tapered. The recipient's vein is then prepared for the reception of the ampule before needling the donor's vein.

609 North College Street.

A SIMPLE AND EFFICIENT METHOD OF COATING BLOOD TRANSFUSION TUBES WITH PARAFFIN

B. H. Alton, M.D., Worcester, Mass.

During the past two years the citrate method of giving blood transfusions has been coming more and more into general use. Many surgeons who formerly employed the paraffin-coated tubes for transfusion have given up this method for the citrated blood.

The principal objection to the use of the paraffin-coated tube is the difficulty of obtaining a thin, even coating of paraffin. Coating tubes with melted paraffin is a long, tedious process, and good results are obtained only in the hands of those who are experienced in the method.

The advantages of the method I am about to describe are simplicity, rapidity, and the assurance of always obtaining a thin even coating of paraffin.

METHOD

The sterilized tubes are rinsed with a small amount of alcohol followed by a small amount of ether. About 1 ounce of a paraffin-ether solution (paraffin, 1 part, 53 C. melting point, and 80 parts of ether) is poured into the tube.

The tube is shaken and rolled so that the solution bathes the entire inner surface. A small amount is allowed to pass through the cannula to insure a coating of the walls of its lumen. The remaining solution is quickly emptied through the top of the tube. The ether which remains on the surface quickly evaporates, leaving a thin, even coating of paraffin.

A rubber cork should be used with this method. It is prepared by pouring some paraffin-ether solution over it and the ether is allowed to evaporate. The cork and tube are now wrapped in a sterile towel.

I have found that a tube coated by this method gives better results if it is not used for several hours after it has been prepared, as it allows a more complete drying of the paraffin.

The foregoing procedure is carried out under aseptic conditions. The paraffin used in the solution should be sterilized in an autoclave before being mixed with the ether.

I have used this method for the past two years in the British casualty clearing stations in France, and I have found it as satisfactory as paraffin applied by heat.

72 Pearl Street.

ANOTHER DIAGRAM FOR BLOOD GROUPING

M. W. Lyon, Jr., M.D., South Bend, Ind.

Several diagrams have been published[1] showing the interrelations of the human isohemagglutination groups, and the manner of determining the group to which any person belongs by the use of serum obtained from persons of Groups II and III. By using both cells and serum of a person of Group II (or III) and those of an unknown person it is nearly as easy to determine the group to which the unknown person belongs as it is with serum of known II and III groups. While this fact has been long appreciated, so far as I am aware it has never been expressed diagrammatically. The diagram herewith is an attempt to do so.

In case the determination is to be made with a known III person, III should be substituted for II in the diagram, and II for III.

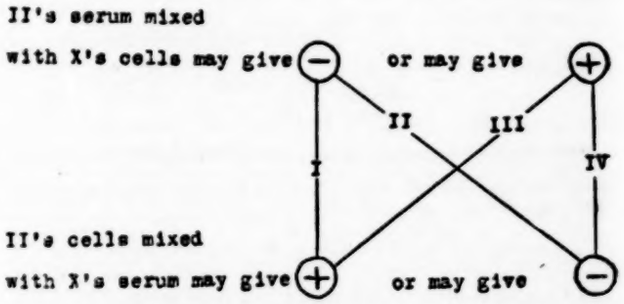


Diagram indicating the blood group of an unknown person, X, by interagglutination of X's serum and cells with those of an individual of known Group II: + indicates agglutination of cells; —, absence of agglutination. The possible combinations are indicated by connecting lines and the blood group of X by the Roman numerals inserted in the connecting lines.

As about half of all persons fall into either Group II or Group III, it is obvious that about half of all persons interested in blood grouping carry with them several hundred cubic centimeters of essential reagents for determining the blood groups of unknown persons.

1. Sanford, A. H.: Iso-Agglutination Groups, J. A. M. A. **67**: 808, 809 (Sept.) 1916; A Modification of the Moss Method of Determining Isohemagglutination Groups, ibid. **70**: 1221 (April 27) 1918.

Influenza Among Indians.—In *Public Health Reports* of May 9, 1919, there appeared data furnished by the Office of Indian affairs in regard to the prevalence of influenza among the Indians. The mortality rates show that the epidemic was extremely severe among the American Indians. During the six months' period from Oct. 1, 1918, to March 31, 1919, over 2 per cent. of the Indian population died of influenza. The mortality among Indians in the mountain states, especially in Colorado, Utah and New Mexico, was very high. For the Indian population as a whole, the annual mortality rate from influenza alone during the six months' period was 41.2 per thousand, which is far above that for the general population—roughly about four times as high as that for the larger cities in the United States during the same epidemic period. It was pointed out by the Office of Indian Affairs that a second epidemic invasion occurred in certain localities after April 1, 1919, but the statistics of this second epidemic were not yet available.

MEDICAL EDUCATION IN THE UNITED STATES

ANNUAL PRESENTATION OF EDUCATIONAL DATA FOR 1919 BY THE COUNCIL ON MEDICAL EDUCATION

The tabulated statistics herewith presented are for the year ending June 30, 1919, and are based on reports received from the medical colleges or from other reliable sources. We take pleasure in acknowledging here the courtesy and cooperation of the officers of the colleges who have made the compilation of these complete statistics possible.

STATISTICS OF COLLEGES

Table 1, on pages 500-502, gives the colleges in session during 1918-1919; the population of the city; the rating given to the college in the latest classification of the Council on Medical Education; the number of students, men and women, registered during the year; the number of 1919 graduates, men and women; the number of graduates holding collegiate degrees; the number of teachers for each college; the number of weeks of actual work in the college year; the total fees for each year, the executive officer of the college, and the dates of beginning and ending of the next session. The figures in heavy-faced type show the totals by states. Beginning on page 523 are given essential facts concerning all medical colleges arranged by states.

HOME STATES OF MEDICAL STUDENTS

Table 2, on pages 504, 505, shows from what state the students came who were in attendance at each medical college during the session of 1918-1919. The influence of the proximity of the medical school is seen in the fact that states having medical colleges contribute more students in proportion to the population than those which have no colleges. This is shown by the dark zone of figures running diagonally down the page. A comparison of this table with the large tables based on state board examinations,[1] which show the distribution of the alumni of each college, is interesting. The college that has widely distributed alumni usually has a student body from an equally large number of states.

The state furnishing the largest number of students this year was New York with 2,003. Pennsylvania contributed 1,001 and Illinois 931. The next states, in the order of the number of students contributed, are: Massachusetts, 667; Ohio, 653; California, 523; Missouri, 469, and Texas, 428. Four states had less than 10 each, these being Arizona, 8; New Mexico, 7; Nevada, 6, and Wyoming, 8. There were 105 students from Hawaii, Porto Rico and the Philippine Islands, and 314 students from foreign countries.

1. The Journal A. M. A., State Board Number, April 19, 1919, pages 1138 to 1145 inclusive.

NUMBERS OF STUDENTS BY CLASSES

In Table 3, on page 506, the students enrolled in each college are shown by classes. This permits one to see whether the attendance at each college is increasing or decreasing. The total attendance for the first year was 3,104 as compared with 4,283 last year and 4,107 in 1917. This reduction in the number of freshman students was largely due to the volunteering or drafting of premedical and freshman students during the war. The second year attendance was 3,587, as compared with 3,521 last year, and 3,117 in 1917. The third year attendance was 3,272, as compared with 2,893 last year, and 2,866 in 1917. The enrolment of the fourth and fifth (intern) years, combined this year, is 3,089, as compared with 2,933 last year, and 3,674 in 1917. The sophomore, junior and senior class enrolments, therefore, show increases, respectively, of 66, 379 and 741 over the enrolments in those classes last year. This indicates that the college enrolments have largely been readjusted under the higher entrance requirements and, had it not been for the war, the total enrolment in the medical schools would also have shown an increase.

TABLE 3.—Medical College Attendance

Year	Non-sectarian	Homeopathic	Eclectic	Physio-Med.	Nondescript	Total
1880.....	9,776	1,220	830	...	...	11,826
1890.....	13,521	1,164	719	...	...	15,404
1900.....	22,710	1,909	522	...	...	25,171
1901.....	23,846	1,983	664	80	144	26,417
1902.....	24,878	1,617	765	91	150	27,501
1903.....	24,930	1,498	848	149	190	27,615
1904.....	22,662	1,309	1,014	123	284	28,142
1905.....	24,119	1,104	578	114	232	26,147
1906.....	23,116	1,085	644	110	249	25,204
1907.....	22,308	1,039	545	97	292	24,276
1908.....	20,936	891	479	90	266	22,662
1909.....	20,554	809	413	52	227	22,145
1910.....	20,136	867	455	49	19	21,526
1911.....	18,414	890	422	49	...	19,786
1912.....	17,277	827	308	...	...	18,412
1913.....	15,919	850	256	...	...	17,015
1914.....	15,438	794	270	...	...	16,502
1915.....	13,914	736	241	...	...	14,891
1916.....	13,121	638	263	...	...	14,022
1917.....	12,995	580	250	...	...	13,764
1918.....	12,727	540	138	...	225	13,630
1919.....	12,259	397	86	...	310	13,052

EXISTING AND EXTINCT MEDICAL COLLEGES

Table 4, on pages 507 to 512, gives (*a*) the different names under which each existing college has been known, the years when the institution was so known, the years when it had (or did not have) graduates under that title and a reference to any previous or subsequent names under which it existed; (*b*) similar

(Continued on page 502)

TABLE 1—STATISTICS OF MEDICAL COLLEGES IN THE UNITED STATES AND CANADA

Marginal Number	NAME AND LOCATION OF COLLEGE	Population of City where College is Located (Census Bureau Estimate of 1916)	Classification by Council on Medical Education	No. of Students Registered 1918-19		Graduates 1919		Grads. with A.B., B.S., or Ph.B.	Number of Teachers	Weeks in College Year	Total Fees (Dollars)				Executive Officer	Session of 1919-20		Marginal Number
				Men	Women	Men	Women				1st year	2d year	3d year	4th year		Begins 1919	Ends 1920	
	ALABAMA			**56**	...	**4**	...	**2**										
1	University of Alabama School of Medicine, Mobile	58,221	A	56	...	4	...	2	45	32	165	160	160	185	T. H. Frazer, M.D., Dean	Oct. 3	June 4	1
	ARKANSAS			**43**	...	**7**	...	**1**										
2	University of Arkansas Medical Department, Little Rock*[1]	57,343	A	43	...	7	...	1	61	34	50	50	50	50	Morgan Smith, M.D., Dean	Sept. 22	June 9	2
	CALIFORNIA			**433**	**61**	**68**	**8**	**43**										
3	College of Medical Evangelists, Loma Linda	125	B	71	13	5	...	4	97	35	181	181	176	186	Newton Evans, M.D., President	Sept. 7	June 3	3
4	College of Physicians and Surgeons, Los Angeles	503,812	B	70	11	26	2	6	99	38	222	217	202	227	C. W. Bryson, M.D., Dean	Sept. 2	June 17	4
5	Oakland College of Medicine and Surgery, Oakland[2]	198,604	C	5	2	1	1	...	...	...	...	...	...	...	.....	.....	.....	5
6	College of Physicians and Surgeons of San Francisco[2]	463,516	C	22	3	4	...	.. .	...	...	...	...	...	...	.....	.....	.....	6
7	Leland Stanford Junior Univ. School of Med., San Francisco	463,516	A	95	14	15	1	16	95	34	159	159	159	159	William Ophüls, M.D., Dean	Oct. 1	June 16	7
8	University of California Medical School, San Francisco	463,516	A	170	18	18	4	20	140	35	200	155	150	150	Herbert C. Moffitt, M.D., Dean	Aug. 19	May 12	8
	COLORADO			**72**	**3**	**18**	**1**	**6**										
9	University of Colorado School of Medicine, Denver[3]	260,800	A	72	3	18	1	6	61	34	100	100	90	90	Charles N. Meader, M.D., Dean	Sept. 29	June 11	9
	CONNECTICUT			**66**	**3**	**12**	...	**9**										
10	Yale University School of Medicine, New Haven	149,685	A	66	3	12	...	9	91	36	205	200	200	210	George Blumer, M.D., Dean	Sept. 25	June 23	10
	DISTRICT OF COLUMBIA			**277**	**5**	**44**	**1**	**23**										
11	Georgetown University School of Medicine, Washington	363,980	A	73	...	8	..	7	92	34	190	175	175	175	George M. Kober, M.D., Dean	Sept. 26	June 11	11
12	George Washington University Medical School, Washington	363,980	A	98	3	16	...	...	93	33	175	175	175	175	W. C. Borden, M.D., Dean	Sept. 24	June 2	12
13	Howard University School of Medicine, Washington	363,980	A	106	2	20	1	16	40	34	165	135	155	162	Edward A. Balloch, M.D., Dean	Oct. 1	June 11	13
	GEORGIA			**210**	...	**33**	...	**10**										
14	Emory University School of Medicine, Atlanta	190,558	A	147	...	25	...	6	106	33	172	160	155	180	W. S. Elkin, M.D., Dean	Sept. 30	June 8	14
15	University of Georgia Medical Department, Augusta[3]	50,245	A	63	...	8	...	4	48	34	65	60	60	50	William H. Doughty, Jr., M.D., Dean	Sept. 12	May 29	15
	ILLINOIS			**1464**	**94**	**241**	**6**	**132**										
16	Chicago Hospital College of Medicine, Chicago	2,497,722	C	54	...	12	...	...	...	...	160	150	150	180	.....	.....	.....	16
17	Hahnemann Medical College and Hospital of Chicago.—H.	2,497,722	B	40	2	19	1	3	86	34	176	162	177	192	Joseph P. Cobb, M.D., Dean	Sept. 29	June 10	17
18	Loyola University School of Medicine, Chicago	2,497,722	B	254	17	70	2	5	134	34	166	166	166	211	Rev. P. J. Mahan, Regent	Oct. 1	June 12	18
19	Northwestern University Medical School, Chicago	2,497,722	A	294	...	19	...	13	156	33	205	200	195	210	Arthur I. Kendall, M.D., Dean	Oct. 7	June 13	19
20	Rush Medical College (University of Chicago)	2,497,722	A	573	60	75	1	73	209	34	195	190	180	195	John M. Dodson, M.D., Dean	Oct. 1	June 19	20
21	University of Illinois College of Medicine, Chicago	2,497,722	A	249	15	46	2	38	115	33	165	160	150	165	Albert C. Eycleshymer, M.D., Dean	Oct. 1	June 9	21
	INDIANA			**194**	**6**	**32**	...	**27**										
22	Indiana University School of Medicine, Indianapolis	271,708	A	194	6	32	...	27	156	35	100	100	130	130	Charles P. Emerson, M.D., Dean	Sept. 15	June 9	22
	IOWA			**226**	**6**	**44**	**1**	**22**										
23	State University of Iowa College of Medicine, Iowa City[3]	12,033	A	222	6	43	1	21	41	34	85	85	85	85	Lee Wallace Dean, M.D., Dean	Sept. 29	June 11	23
24	State University of Iowa Coll. of Homeo. Med., Iowa City.—H.*	12,033	A	4	...	1	...	1	20	...	...	...	...	...	.....	.....	.....	24
	KANSAS			**128**	**8**	**20**	...	**13**										
25	University of Kansas School of Medicine, Rosedale-Kansas City	404,782	A	128	8	20	...	13	70	35	100	100	100	100	M. T. Sudler, M.D., Assoc. Dean	Sept. 15	June 9	25
	KENTUCKY			**95**	**4**	**18**	...	**2**										
26	University of Louisville Medical Department, Louisville	238,910	A	95	4	18	...	2	109	34	175	176	180	183	Henry Enos Tuley, M.D., Dean	Sept. 23	June 5	26
	LOUISIANA			**265**	**10**	**71**	**2**	**33**										
27	Tulane University of Louisiana School of Medicine, New Orleans	371,747	A	265	10	71	2	33	139	34	200	200	205	235	Isadore Dyer, M.D., Dean	Sept. 22	June 9	27
	MAINE			**45**	...	**16**	...	**9**										
28	Bowdoin Medical School, Brunswick-Portland	68,867	A	45	...	16	...	9	58	34	130	126	110	105	Addison S. Thayer, M.D., Dean	Oct. 9	June 21	28
	MARYLAND			**544**	**65**	**128**	**15**	**101**										
29	Johns Hopkins University Medical Department, Baltimore	589,621	A	310	64	78	15	33	171	34	267	267	267	267	J. Whitridge Williams, M.D., Dean	Sept. 30	June 15	29
30	Univ. of Maryland Sch. of Med. and Coll. of P. and S., Baltimore	589,621	A	234	1	50	...	8	173	32	205	205	205	205	J. M. H. Rowland, M.D., Dean	Oct. 1	June 1	30
	MASSACHUSETTS			**884**	**45**	**206**	**12**	**104**										
31	Boston University School of Medicine, Boston	756,476	A	49	11	2	10	4	79	32	183	170	168	190	John P. Sutherland, M.D., Dean	Oct. 2	June 2	31
32	College of Physicians and Surgeons, Boston[5]	756,476	C	35	...	6	...	...	...	...	115	140	120	125	.....	.....	.....	32
33	Medical School of Harvard University, Boston	756,476	A	399	...	98	...	89	269	33	230	225	225	225	David L. Edsall, M.D., Dean	Sept. 22	May 29	33
34	Tufts College Medical School, Boston	756,476	A	324	34	90	2	11	103	35	178	169	155	155	Charles F. Painter, M.D., Dean	Sept. 22	June 15	34
35	Middlesex College of Medicine and Surgery, Cambridge.—N.[5]	112,981	C	77	...	10	...	...	...	...	150	150	150	150	.....	.....	.....	35
	MICHIGAN			**494**	**30**	**92**	**2**	**50**										
36	University of Michigan Medical School, Ann Arbor[3]	14,979	A	335	26	52	2	38	106	35	105	105	105	105	Victor C. Vaughan, M.D., Dean	Sept. 30	June 24	36
37	University of Michigan Homeo. Medical School, Ann Arbor.—H.*	14,979	A	30	1	11	...	5	17	35	105	105	105	105	W. B. Hinsdale, M.D., Dean	Sept. 30	June 24	37
38	Detroit College of Medicine and Surgery, Detroit	571,784	A	129	3	29	...	7	150	35	155	150	150	180	W. H. McCraken, M.D., Dean	Oct. 6	June 26	38
	MINNESOTA			**270**	**16**	**54**	...	**44**										
39	University of Minnesota Medical School, Minneapolis	363,454	A	270	16	54	...	44	183	34	150	150	150	150	E. P. Lyon, M.D., Dean	Oct. 1	June 17	39
	MISSISSIPPI			**46**	**2**	...	...	...										
40	University of Mississippi School of Medicine, Oxford*	2,014	A	46	2	...	...	...	18	34	122	122	...	...	W. S. Leathers, M.D., Dean	Sept. 17	June 1	40

	MISSOURI			**722**	**36**	**215**	**14**	**63**											
41	University of Missouri School of Medicine, Columbia*	12,103	A	62	3	...	...	...	25	31	80	51	...	...	Guy L. Noyes, M.D., Dean	Aug. 29	April 22	41
42	Kansas City College of Medicine and Surgery, Kansas City.—N.[6]	297,847	*	88	9	28	3	...	...	...	200	200	200	200	D. R. Alexander, M.D., Secretary	.....	.....	42
43	Kansas City Univ. of Physicians and Surgeons, Kansas City.—N.[7]	297,847	C	116	20	65	10	...	24	35	150	150	150	165	A. L. McKenzie, D.O., President	Sept. 8	May 27	43
44	St. Louis College of Physicians and Surgeons, St. Louis[8]	757,309	C	48	3	23	1	...	...	...	145	140	140	140	Waldo Briggs, M.D., Dean	.....	.....	44
45	St. Louis University School of Medicine, St. Louis	757,309	A	253	...	49	...	23	127	32	175	175	175	175	Hanau W. Loeb, M.D., Dean	Oct. 1	May 31	45
46	Washington University Medical School, St. Louis	757,309	A	155	1	50	...	40	114	34	205	200	200	205	G. Canby Robinson, M.D., Dean	Sept. 25	June 10	46
	NEBRASKA			**247**	**7**	**52**	**1**	**32**											
47	John A. Creighton Medical College, Omaha	165,470	A	92	...	19	...	5	58	34	166	156	156	161	H. von W. Schulte, M.D., Dean	Sept. 22	June 5	47
48	University of Nebraska College of Medicine, Omaha	165,470	A	155	7	33	1	27	68	34	135	130	120	120	Irving S. Cutter, M.D., Dean	Sept. 22	June 10	48
	NEW HAMPSHIRE			**34**	...	...	...	...											
49	Dartmouth Medical School, Hanover*	2,075	A	34	...	...	...	...	12	36	180	180	...	...	John M. Gile, M.D., Dean	Sept. 25	June 23	49
	NEW YORK			**2154**	**116**	**435**	**21**	**175**											
50	Albany Medical College, Albany	110,199	A	65	1	12	...	3	63	34	195	180	165	165	Thomas Ordway, M.D., Dean	Sept. 22	June 10	50
51	University of Buffalo Medical Department, Buffalo	468,558	A	169	14	34	3	4	114	34	205	200	200	200	C. Sumner Jones, M.D., Dean	Sept. 29	June 11	51
52	Columbia University Coll. of Phys. and Surgs., New York City	5,602,841	A	506	20	138	...	106	250	33	265	251	250	275	Samuel W. Lambert, M.D., Dean	Sept. 24	June 2	52
53	Cornell University Medical College, New York City	5,602,841	A	162	44	23	6	29	134	33	240	235	235	250	Walter L. Niles, M.D., Acting Dean	Sept. 29	June 10	53
54	Fordham University School of Medicine, New York City[9]	5,602,841	A	243	...	63	...	...	...	...	...	...	...	...	.....	.....	.....	54
55	Long Island College Hospital, Brooklyn	1,928,734	A	356	14	52	1	8	128	34	255	250	250	275	Otto V. Huffman, M.D., Dean	Sept. 22	June 2	55
56	New York Homeopathic Med. Coll. and Flower Hospital.—H.	5,602,841	B	123	20	12	11	2	60	33	220	210	200	230	Thomas J. Preston, Jr. Ph.D., Dean	Sept. 25	June 5	56
57	University and Bellevue Hospital Medical College, New York City	5,602,841	A	403	...	79	...	9	160	35	225	225	215	240	Samuel A. Brown, M.D. Dean	Sept. 16	June 10	57
58	Syracuse University College of Medicine, Syracuse	155,624	A	127	5	22	...	14	91	35	210	210	210	220	John L. Heffron, M.D., Dean	Sept. 16	June 9	58
	NORTH CAROLINA			**85**	**1**	...	...	...											
59	University of North Carolina School of Medicine, Chapel Hill*	1,149	A	50	1	...	...	...	24	34	150	150	...	...	Isaac Hall Manning, M.D., Dean	Sept. 30	June 11	59
60	Wake Forest College School of Medicine, Wake Forest*	1,443	A	35	...	...	...	...	11	35	115	115	...	...	E. B. Earnshaw, Secretary	Sept. 2	May 28	60
	NORTH DAKOTA			**19**	**2**	...	...	...											
61	Univ. of North Dakota School of Med., University (Grand Forks)*	15,332	A	19	2	...	...	...	15	35	50	50	...	...	Harley E. French, M.D., Dean	Sept. 22	June 15	61
	OHIO			**584**	**17**	**116**	**5**	**75**											
62	Eclectic Medical College, Cincinnati.—E.	410,476	B	82	4	26	2	2	30	32	130	120	120	130	John K. Scudder, M.D., Secretary	Sept. 11	May 11	62
63	University of Cincinnati College of Medicine	410,476	A	160	8	25	2	22	106	34	200	200	150	170	Christian R. Holmes, M.D., Dean	Sept. 30	June 11	63
64	Western Reserve University School of Medicine, Cleveland	674,073	A	180	...	41	...	41	110	34	175	160	154	155	Carl A. Hamann, M.D., Dean	Oct. 2	June 17	64
65	Ohio State University College of Medicine, Columbus	214,878	A	108	3	16	...	10	94	36	152	152	152	152	E. F. McCampbell, M.D., Dean	Sept. 16	June 15	65
66	Ohio State University College of Homeo. Med., Columbus.—H.	214,878	B	34	2	8	1	...	13	36	150	150	150	150	Claude A. Burrett, M.D., Dean	Sept. 16	June 15	66
	OKLAHOMA			**69**	**4**	**12**	...	**3**											
67	University of Oklahoma School of Med., Norman-Oklahoma City	92,943	B	69	4	12	...	3	64	35	61	40	23	23	Leroy Long, M.D., Dean	Sept. 11	June 8	67
	OREGON			**58**	**8**	**15**	...	**4**											
68	University of Oregon Medical School, Portland	295,463	A	58	8	15	...	4	112	32	170	166	162	160	K. A. J. Mackenzie, M.D., Dean	Oct. 1	May 31	68
	PENNSYLVANIA			**1272**	**82**	**345**	**13**	**114**											
69	Hahnemann Medical College and Hospital of Philadelphia.—H.	1,709,518	A	138	...	25	..	5	84	32	205	202	202	217	William A. Pearson, M.D., Dean	Sept. 29	May 31	69
70	Jefferson Medical College of Philadelphia	1,709,518	A	451	...	142	...	25	163	34	215	210	210	210	Ross V. Patterson, M.D., Dean	Sept. 22	June 5	70
71	Temple University Department of Medicine, Philadelphia	1,709,518	B	95	...	30	...	2	97	33	175	170	160	160	Frank C. Hammond, M.D., Dean	Sept. 22	June 1	71
72	University of Pennsylvania School of Medicine, Philadelphia	1,709,518	A	448	19	121	4	60	194	35	233	210	210	214	William Pepper, M.D., Dean	Sept. 26	June 16	72
73	Woman's Medical College of Pennsylvania, Philadelphia	1,709,518	A	....	66	...	7	4	59	34	198	202	184	180	Martha Tracy, M.D., Dean	Oct. 1	June 16	73
74	University of Pittsburgh School of Medicine, Pittsburgh	579,080	A	140	7	27	2	18	130	33	265	250	250	250	Thomas S. Arbuthnot, M.D., Dean	Sept. 29	June 4	74
	SOUTH CAROLINA			**66**	...	**14**	...	**4**											
75	Medical College of the State of South Carolina, Charleston	60,734	A	66	...	14	...	4	61	33	150	150	145	145	Robert Wilson, Jr., M.D., Dean	Sept. 26	June 3	75
	SOUTH DAKOTA			**17**	**2**	...	...	...											
76	University of South Dakota College of Medicine, Vermilion*	2,376	A	17	2	...	...	...	10	35	60	60	...	...	Christian P. Lommen, B.S., Dean	Sept. 29	June 21	76
	TENNESSEE			**368**	**2**	**90**	...	**28**											
77	University of Tennessee College of Medicine, Memphis[8]	148,995	A	62	1	20	...	4	105	34	107	102	102	127	A. H. Wittenborg, M.D., Dean	Sept. 20	June 2	77
78	University of West Tennessee Medical Department, Memphis[9]	148,995	C	18	...	4	...	2	20	32	80	80	80	90	M. V. Lynk, M.D., Dean	Sept. 22	May 23	78
79	Meharry Medical College, Nashville	117,057	B	174	1	41	...	19	24	30	87	87	87	97	G. W. Hubbard, M.D., President	Oct. 7	May 20	79
80	Vanderbilt University School of Medicine, Nashville	117,057	A	114	...	25	...	3	81	33	150	150	150	175	Lucius E. Burch, M.D., Dean	Sept. 29	June 9	80
	TEXAS			**314**	**21**	**63**	**5**	**16**											
81	Baylor University College of Medicine, Dallas	124,527	A	122	4	20	2	1	49	32	160	155	155	150	Edward H. Cary, M.D., Dean	Sept. 29	May 27	81
82	University of Texas Department of Medicine, Galveston	41,863	A	192	17	43	3	15	38	32	78	48	31	18	W. S. Carter, M.D., Dean	Oct. 1	May 31	82
	UTAH			**27**	**1**	...	...	...											
83	University of Utah School of Medicine, Salt Lake City*	117,399	A	27	1	...	...	...	24	33	95	95	...	...	Perry G. Snow, M.D., Dean	Sept. 29	June 6	83
	VERMONT			**90**	...	**20**	...	**2**											
84	University of Vermont College of Medicine, Burlington	21,432	A	90	...	20	...	2	43	36	145	145	145	170	Henry C. Tinkham, M.D., Dean	Sept. 24	June 30	84

E.—Eclectic; H.—Homeopathic; N.—Nondescript.

* Gives only the first two years of the medical course.

1. The University of Arkansas Medical Department has temporarily suspended clinical teaching anticipating a complete reorganization of the clinical departments.

2. The College of Physicians and Surgeons of San Francisco and the Oakland College of Medicine and Surgery discontinued medical teaching in 1918. They will retain a nominal existence until 1921 in order to grant degrees to the students of the three remaining classes who are finishing their instruction elsewhere — mostly at the College of Physicians and Surgeons, Los Angeles.

3. Fees given are for residents of the state. For nonresidents amounts should be added for each year in the several states as follows: Colorado, $30; Georgia, $100; Iowa, $15; Michigan, $20 (and $25 extra the first year for matriculation); Tennessee, $50 and Wisconsin, $124.

4. The State University of Iowa College of Homeopathic Medicine has been abolished by the Iowa legislature and an elective chair in homeopathic materia medica and therapeutics has been established in the College of Medicine.

5. No report received direct. From the announcement and other sources the total attendance, graduates and fees are estimated.

6. The Kansas City College of Medicine and Surgery is an offshoot of the Eclectic Medical University of Kansas City, a Class C institution now extinct. The former institution, according to an official statement, is not recognized by the licensing board of Missouri — its home state — and thirty-two other states. With this record it could not be rated higher than Class C.

7. This was formerly the Central College of Osteopathy, in 1917 it changed its name to the Central College Medical Department and in 1918 took its present title. It is reported not recognized as a medical school by the medical licensing boards of Missouri — its home state — and thirty-three other states.

8. This college was ordered closed by the trustees of Fordham University on the grounds that sufficient funds were not available to maintain it in a satisfactory manner.

9. According to official statements this college is not recognized by the licensing boards of Tennessee — its home state — or of thirty eight other states.

(Continued from page 499)

information regarding medical colleges which have ceased to exist; (*c*) the years when each institution began to require for admission, respectively, one year and two years or more of collegiate work; (*d*) the classification given to the college named by the Council on Medical Education and, if it had more than one rating, the years when each rating was held, and (*e*) the key number by which a full description of each institution can be found in the American Medical Directory. Names of colleges now existing are in heavy faced type.

This table is important since claims of graduation from a medical school during other than the dates given should be held in doubt and subjected to special investigation.

The names of a few hundred medical schools which were reported fraudulent, or not recognized by the licensing boards in their respective states, or in regard to which there is doubt as to whether any classes were ever held, have been omitted from the above list. Reference to such institutions can be obtained in the American Medical Directory.

TABLE 6.—Medical College Graduates

Year	Non-sectarian	Homeopathic	Eclectic	Physio-Med.	Nondescript	Total
1880.....	2,673	380	188	..	..	3.241
1890.....	3.853	380	221	..	..	4.454
1900.....	4,715	413	86	..	..	5.214
1901.....	4.879	387	148	18	12	5.444
1902.....	4.508	336	138	16	11	5.009
1903.....	5,088	420	149	24	17	5,698
1904.....	5,190	371	146	20	20	5,747
1905.....	5,126	276	153	22	23	5,600
1906.....	4,841	286	186	22	29	5,364
1907.....	4,591	225	121	11	32	4.980
1908.....	4.370	215	116	12	28	4.741
1909.....	4,163	209	84	15	44	4.515
1910.....	4,113	183	114	16	14	4.440
1911.....	4,006	152	110	5	..	4,273
1912.....	4,206	185	92	..	..	4.483
1913.....	3,679	209	93	..	..	3.981
1914.....	3,370	154	70	..	..	3.594
1915.....	3,286	195	55	..	..	3,536
1916.....	3,274	166	78	..	..	3,518
1917.....	2,134	180	65	..	..	3,379
1918.....	2,454	114	42	..	60	2.670
1919.....	2,423	89	28	..	116	2,656

NUMBER OF MEDICAL STUDENTS

The total number of medical students (Table 5) in the United States for the year ending June 30, 1919, excluding premedical, special and postgraduate students, was 13,052, a decrease of 578 below last year. It is noteworthy (Table 13, page 513) that in the high grade (Class A) medical colleges the percentage of all students has increased. Of the total number of students, 12,259 (93.9 per cent.) were in attendance at the nonsectarian (regular) colleges, 397 (3.0 per cent.) at the homeopathic, 86 (0.7 per cent.) at the eclectic, and 310 (2.4 per cent.) were enrolled in three nondescript colleges. These three colleges consist of two semi-osteopathic and one nominally

TABLE 1—STATISTICS OF MEDICAL COLLEGES IN THE UNITED STATES AND CANADA—(Concluded)

Marginal Number	NAME AND LOCATION OF COLLEGE	Population of City where College is Located (Census Bureau Estimate of 1916)	Classification by Council on Medical Education	No. of Students Registered 1918-19		Graduates 1919		Grads. with A.B., B.S., or Ph.B.	Number of Teachers	Weeks in College Year	Total Fees (Dollars)				Executive Officer	Session of 1919-20	
				Men	Women	Men	Women				1st year	2d year	3d year	4th year		Begins 1919	Ends 1920
	VIRGINIA																
85	Medical College of Virginia, Richmond	136,687	A	231	4	45	...	17	132	34	190	200	200	230	A. L. Gray, M.D., Dean	Sept. 17	June 3
86	University of Virginia Department of Medicine, Charlottesville	12,500	A	112	...	25	...	4	33	36	140	140	140	140	Theodore Hough, M.D., Dean	Sept. 18	June 16
	WEST VIRGINIA			36	3	...	...	13	10	35	40	25	...	...	John N. Simpson, M.D., Dean	Sept. 22	June 15
87	West Virginia University School of Medicine, Morgantown*	12,974	A	36	3	...	...	...	...	...	...	...	...	...			
	WISCONSIN			181	10	13	...	13	37	34	75	75	...	...	C. R. Bardeen, M.D., Dean	Sept. 29	June 16
88	University of Wisconsin Medical School, Madison**	30,699	A	110	8	...	...	...	87	34	220	220	220	230	L. F. Jermain, M.D., Dean	Oct. 1	June 17
89	Marquette University School of Medicine, Milwaukee	436,535	A	71	2	13	...	13	87	34	220	220	220	230			
	CANADA			218	127	284	12	44								Sept. 30	May 13
90	University of Alberta Faculty of Medicine, Edmonton, Alta.[10]	5,579	B	78	10	...	...	...	12	30	88	88	...	...	Cecil E. Race, A.B., Registrar	Oct. 1	May 27
91	Dalhousie University Faculty of Medicine, Halifax, N. S.	46,619	B	98	15	9	1	1	35	32	115	125	125	125	D. Fraser Harris, M.D., Secretary	Sept. 22	June 9
92	Queen's University Faculty of Medicine, Kingston, Ont.	18,874	B	228	...	61	...	10	46	34	125	125	125	125	J. C. Connell, M.D., Dean	Sept. 30	May 31
93	University of Toronto Faculty of Medicine, Toronto, Ont.	376,538	A	619	79	47	9	7	216	32	150	150	150	150	C. K. Clarke, M.D., Dean	Oct. 1	May 30
94	Western University Faculty of Medicine, London, Ont.	46,300	B	93	...	16	...	...	53	32	120	128	120	145	Paul S. McKibben, M.D., Acting Dean	Oct. 1	May 30
95	McGill University Faculty of Medicine, Montreal, Que.	470,480	A	463	8	78	...	23	138	32	174	174	174	204	John W. Scane, M.D., Registrar	Oct. 1	May 30
96	Montreal School of Medicine and Surgery, Montreal, Que.	470,480	B	241	...	93	...	...	60	36	118	126	126	138	L. D. Mignault, M.D., Secretary	Oct. 3	June 30
97	Laval University Faculty of Medicine, Quebec, Que.	78,190	B	148	...	42	...	...	35	34	90	90	90	90	Edwin Turcot, M.D., Dean	Sept.	June
98	University of Manitoba, Manitoba Medical College, Winnipeg	136,035	B	141	15	28	2	1	60	30	175	165	170	160	S. Willis Prowse, M.D., Dean	Sept. 15	May 1

E.—Eclectic; H.—Homeopathic; N.—Nondescript.
* Gives only the first two years of the medical course.

10. The University of Alberta at Edmonton, besides the premedical year, gives only the first two years of the medical course as measured by that of the medical schools of the United States. It has not been inspected.

eclectic affair. Two of them are outlawed in their home state—Missouri—and one is in Massachusetts, which has a feeble medical practice law. None of them, therefore, is subject to rigid laws or regulations. One of them, the Kansas City College of Medicine and Surgery, exists only by the enjoyment of special privileges obtained through a sectarian licensing board in an adjoining state, the Eclectic Board of Arkansas!

TABLE 7.—MEDICAL GRADUATES WITH LIBERAL ARTS DEGREES

Year	Nonsectarian			Homeopathic			Eclectic			Totals		
	Graduates	A.B., B.S.	Per Cent.	Graduates	A.B., B.S.	Per Cent.	Graduates	A.B., B.S.	Per Cent.	Graduates	A.B., B.S.	Per Cent.
1910.....	4,113	664	16.1	183	13	7.1	114	3	2.6	4,440	680	15.3
1911.....	4,006	683	17.0	152	18	11.8	110	4	3.6	4,273	705	16.5
1912.....	4,206	744	17.7	185	15	8.1	92	4	4.3	4,483	763	17.0
1913.....	3,679	732	19.9	209	20	9.6	93	1	1.1	3,981	753	18.9
1914.....	3,370	794	23.5	154	7	4.5	70	6	8.6	3,594	807	22.5
1915.....	3,286	839	25.5	195	16	8.2	55	3	5.5	3,536	858	24.3
1916.....	3,274	928	28.3	166	20	12.0	78	...	.....	3,518	948	26.9
1917.....	3,134	1078	34.4	180	19	10.5	65	2	3.1	3,379	1099	32.5
1918*.....	2,454	1007	41.0	114	15	13.2	60	...	.....	2,670	1024	38.4
1919*.....	2,423	1162	48.0	89	16	18.0	28	2	7.1	2,656	1180	44.4

* None of the graduates of nondescript colleges during the last two years was reported to have a collegiate degree.

NUMBER OF MEDICAL GRADUATES

The total number of graduates for the year ending June 30, 1919, was 2,656, a decrease of 14 below 1918. The number of graduates from the nonsectarian colleges was 2,423 or 31 less than last year. The number from the homeopathic colleges was 89 or 25 less than last year, and from the eclectic colleges there were 28 graduates, or 14 less than last year. The three nondescript colleges had 116 graduates.

TABLE 8.—WOMEN IN MEDICINE

Year	Total Women Students	Percentage of All Students, Both Sexes	Total Women Graduates	Percentage of Graduates, Both Sexes	Women's Colleges	Students	Percentage of All Women Students	Graduates	Percentage of All Women Graduates	Co-ed. Schools	Students	Percentage of All Women Students	Graduates	Percentage of All Women Graduates
1904	1,129	4.3	244	4.0	3	183	16.2	56	23.0	97	946	83.8	198	77.0
1905	1,073	4.1	219	4.0	3	221	20.6	54	24.5	96	852	79.4	165	75.5
1906	895	3.5	233	4.3	3	189	21.0	33	14.1	90	706	79.0	200	85.9
1907	928	3.8	211	4.2	3	210	22.6	39	18.5	86	718	77.4	172	81.5
1908	835	3.7	186	3.9	3	186	22.3	46	24.9	88	649	77.7	139	75.1
1909	921	4.2	162	3.7	3	160	18.4	33	20.3	91	732	81.6	129	79.7
1910	907	4.2	157	3.5	3	155	17.1	41	26.1	82	752	82.9	116	73.9
1911	680	3.4	159	3.7	2	134	19.7	36	22.6	74	546	80.3	123	77.4
1912	679	3.2	142	3.2	2	143	21.1	32	22.5	64	536	78.9	110	77.5
1913	640	3.8	154	3.8	2	138	21.6	33	21.4	55	502	78.6	121	78.6
1914	631	3.8	121	3.4	2	135	21.4	25	20.7	54	496	78.6	96	79.3
1915	592	4.0	130	3.7	2	116	19.6	38	29.2	53	462	80.4	92	70.8
1916	563	4.0	134	3.8	2	102	18.0	28	20.0	51	464	82.0	106	80.0
1917	610	4.5	153	4.5	2	81	13.3	29	18.9	56	529	86.7	124	81.1
1918	581	4.3	106	4.0	2	70	12.0	12	11.3	60	511	87.9	94	88.7
1919	686	5.2	107	4.0	1	66	10.0	7	6.5	59	620	90.4	100	93.4

GRADUATES HOLDING DEGREES IN ARTS

Of the 2,656 medical graduates, 1,180 (see Table 12) held also degrees in arts or science. This total includes those taking the combined courses in arts or science and medicine. This year 44.4 per cent. of all graduates held collegiate degrees, as compared with 38.4 last year, 32.5 per cent. in 1917, and 26.9 per cent.

TABLE 9.—MEDICAL COLLEGES

Year	Nonsectarian	Homeopathic	Eclectic	Physio-Med.	Nondescript	Total
1850.....	44	3	4	1	..	52
1860.....	53	6	4	2	..	65
1870.....	60	8	5	2	..	75
1880.....	76	14	8	2	..	100
1890.....	106	16*	9	2	..	133
1900.....	126	22	9	2	1	160
1901.....	125	22	10	2	1	160
1902.....	126	20	9	3	2	160
1903.....	126	20	9	3	2	160
1904.....	127	19	9	3	2	160
1905.....	125	19	9	3	2	158
1906.....	130	19	8	3	2	162
1907.....	127	18	9	3	2	159
1908.....	120	18	9	2	2	151
1909.....	115	15	8	1	1	140
1910.....	109	12	8	1	1	131
1911.....	103	12	7	..	..	122
1912.....	101	11	6	..	..	118
1913.....	92	10	5	..	..	107
1914.....	87	10	5	..	..	102
1915.....	83	9	4	..	..	96
1916.....	82	10	3	..	..	95
1917.....	83	9	4	.	..	96
1918.....	79	6	2	..	3	90
1919.....	76	5	1	..	3	85

in 1916. This increase is what was expected under the general adoption by medical schools of the entrance requirement of two years of college work. In 1910 it is noteworthy that only 15.3 per cent. of the graduates show this evidence of higher preliminary qualifications. Of the 2,423 nonsectarian school graduates, 1,162, or 48.0 per cent., were reported to have bac-

TABLE 10.—COLLEGE TERMS

Year	23 to 26 weeks		27 to 28 weeks		29 to 30 weeks		31 to 32 weeks		33 to 34 weeks		35 to 36 weeks		Over 36 weeks	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1901	58	36.5	42	26.4	8	5.0	26	16.4	4	2.5	18	11.3	3	1.9
1902	44	28.4	44	28.4	11	7.1	33	21.3	3	1.9	18	11.6	2	1.3
1903	33	21.4	46	29.9	15	9.7	37	24.0	2	1.3	19	12.4	2	1.3
1904	27	16.3	44	26.5	22	13.3	37	22.3	12	7.8	20	12.0	3	1.8
1905	15	9.4	35	21.8	12	7.5	44	27.5	13	8.1	28	23.8	3	1.5
1906	14	8.7	35	21.7	26	16.1	32	19.9	24	14.9	28	17.4	2	1.3
1907	6	3.7	27	16.8	26	16.1	42	26.1	29	18.0	29	18.0	2	1.3
1908	2	1.3	21	13.8	28	18.4	51	33.6	24	15.8	22	14.5	4	2.6
1909	4	2.3	17	11.6	23	16.4	51	34.9	18	12.3	30	20.5	3	2.0
1910	2	1.5	8	6.0	19	14.3	42	31.5	30	22.6	30	22.6	2	1.5
1911	..	....	6	5.0	16	13.3	37	30.8	32	26.7	28	23.4	1	0.8
1912	1	0.9	1	0.9	11	9.5	34	29.3	37	31.8	31	26.7	1	0.9
1913	..	....	3	2.8	5	4.7	29	27.4	41	38.7	27	25.5	1	0.9
1914	..	....	2	2.0	4	4.0	25	24.8	41	40.5	28	27.7	1	1.0
1915	..	....	1	1.0	5	5.3	22	23.2	36	37.9	30	31.6	1	1.0
1916	..	....	..	....	4	4.2	17	17.9	43	45.3	28	29.5	..	...
1917	..	....	..	....	1	1.0	15	15.6	46	47.9	31	32.3	..	...
1918*	..	....	..	....	2	2.2	23	25.6	37	41.1	22	24.4	..	...
1919*	..	....	..	....	1	1.2	11	12.9	44	51.8	23	27.1	1	1.2

* Information not furnished by six Class C colleges in 1918 and five in 1919.

calaureate degrees; of the homeopathic graduates 16, or 18.0 per cent., were so reported, and of the eclectic graduates this year 2, or 7.1 per cent., held such degrees. Of the 116 graduates of the nondescript colleges not one was reported as holding a bachelor's degree in arts or science. As will be noted by referring to Table 12, of the 1,180 graduates holding baccalaureate degrees, 175—the largest number—came as last

(Continued on page 506)

Marginal Number	NAME OF COLLEGE	1 Alabama....157	2 Arizona....8	3 Arkansas....81	4 California....523	5 Colorado....127	6 Connecticut....215	7 Delaware....18	8 Dist. of Col. 96	9 Florida....44	10 Georgia....258	11 Idaho....29	12 Illinois....931	13 Indiana....333	14 Iowa....374	15 Kansas....269	16 Kentucky....111	17 Louisiana....140	18 Maine....72	19 Maryland....175	20 Massachusetts..667	Marginal Number
1	University of Alabama School of Medicine	53			4									1								1
2	University of Arkansas Medical Department	2		28	4																	2
3	College of Medical Evangelists		2		32	5						1	3			3				3		3
4	College of Physicians and Surgeons, Los Angeles	1			74								1									4
5	Oakland College of Medicine and Surgery				6																	5
6	College of Physicians and Surgeons of San Francisco				23																	6
7	Leland Stanford Junior Univ., School of Medicine		1		81	1						1		1	1			1				7
8	University of California Medical School				173											1						8
9	University of Colorado School of Medicine					64									2	2						9
10	Yale University School of Medicine						55														1	10
11	Georgetown University School of Medicine						2		20					1	1				2	4	4	11
12	George Washington University Medical School	1			1		2		45				2							5	1	12
13	Howard University School of Medicine	4		1				1	13	4	1		1				3	1		6		13
14	Emory University School of Medicine	11		1						4	106		1		1		2	1				14
15	University of Georgia Medical Department										59											15
16	Chicago Hospital College of Medicine												54									16
17	Hahnemann Medical College and Hospital of Chicago						1						13	2	5	1	1					17
18	Loyola University School of Medicine					2	3				1		161	6	5	1	3				2	18
19	Northwestern University Medical School	2		2	2	5				2	1	1	132	12	11	8	1	1		6		19
20	Rush Medical College (University of Chicago)			2	9	4			1			4	270	27	36	33	5	1				20
21	University of Illinois College of Medicine				4	3					1		171	4	16	3	1					21
22	Indiana University School of Medicine													195								22
23	State University of Iowa College of Medicine				1	1						2	2		205	1						23
24	State University of Iowa College of Homeo. Med.—H.														4							24
25	University of Kansas School of Medicine															123						25
26	University of Louisville Medical Department	1		4		1				2	1		5	11	1		34	1			1	26
27	Tulane University of Louisiana School of Medicine	42	1	11	1				2	8	8				1	1		107				27
28	Bowdoin Medical School						3												32		4	28
29	Johns Hopkins University Medical Department	3		3	7	8	11	1	3	2	15		5	6	4		8	2	4	60	12	29
30	Univ. of Maryland School of Med. & Coll. of P. & S.	2					5	4	1	2	1				1		3			80	5	30
31	Boston University School of Medicine						3	1										1	2		24	31
32	College of Physicians and Surgeons, Boston																				35	32
33	Medical School of Harvard University	4		1	4	8	18		2	1	10	2	8	4	3	1			14		164	33
34	Tufts College Medical School						12		1		1								6		268	34
35	Middlesex College of Medicine and Surgery.—N.																				77	35
36	University of Michigan Medical School	1	1	1	1	4			1	1	1	1	18	12	2	1	1			1		36
37	University of Michigan Homeo. Medical School.—H.												2									37
38	Detroit College of Medicine and Surgery																1					38
39	University of Minnesota Medical School				4						1	1	4		9							39
40	University of Mississippi School of Medicine	3									1											40
41	University of Missouri School of Medicine					1							1									41
42	Kansas City College of Medicine and Surgery.—N.			6												28						42
43	Kansas City Univ. of Physicians and Surgeons.—N.	1	2		7	6						3	5	2	4	20	1					43
44	St. Louis College of Physicians and Surgeons												13									44
45	St. Louis University School of Medicine				12	2					1		47	6	18	10	2	2				45
46	Washington University Medical School			1	2	3							19	2	2	11						46
47	John A. Creighton Medical College					2						1			16	4						47
48	University of Nebraska College of Medicine					1						1			11	2						48
49	Dartmouth Medical School						3														7	49
50	Albany Medical College						1							1							2	50
51	University of Buffalo Medical Department										1					1						51
52	Columbia University College of Phys. and Surgs.			1	1	1	26			1	3	2	1	1			1		2		12	52
53	Cornell University Medical College				3		4		1		2		1	1	1				2		4	53
54	Fordham University School of Medicine						19														4	54
55	Long Island College Hospital						4														1	55
56	New York Homeo. Medical Coll. and Flower Hosp.—H.						2								1						4	56
57	University and Bellevue Hospital Medical College		1		1		8			1	2		2		1						2	57
58	Syracuse University College of Medicine																					58
59	University of North Carolina School of Medicine										1											59
60	Wake Forest College School of Medicine																	1			1	60
61	University of North Dakota School of Medicine																					61
62	Eclectic Medical College, Cincinnati.—E.										1		4	7	1	1	4		1	1		62
63	University of Cincinnati College of Medicine												3	11		1	19					63
64	Western Reserve University School of Medicine	1				1			1	1			2	3	2	1	1					64
65	Ohio State University College of Medicine													4		1	1					65
66	Ohio State University College of Homeo. Med.—H.													1			2					66
67	University of Oklahoma School of Medicine			2						1				1				1				67
68	University of Oregon Medical School				1							2										68
69	Hahnemann Med. Coll. and Hosp. of Philadelphia.—H.							1						4		2					5	3	69
70	Jefferson Medical College of Philadelphia	1			2	1	14	7		1	2	3	1	1	2	1			2	2	10	70
71	Temple University Department of Medicine										1									2	1	71
72	University of Pennsylvania School of Medicine	2			4	2	4	3	1	1		1	3	2	4	2	2		4	4	3	72
73	Woman's Medical College of Pennsylvania	1			2		3			1			1		1	3	1				1	73
74	University of Pittsburgh School of Medicine										1										1	74
75	Medical College of the State of South Carolina									1	1											75
76	University of South Dakota College of Medicine													1	1						1	76
77	University of Tennessee College of Medicine			1						2		1				1	1	1			1	77
78	University of West Tennessee Medical Department	1								1			1					1				78
79	Meharry Medical College	10		7					2	3	25		10	1			3	10				79
80	Vanderbilt University School of Medicine	7		7	2	1				2	1		2	1			5	5				80
81	Baylor University College of Medicine			2	1		1				2					1	2	2			1	81
82	University of Texas Department of Medicine	1									1											82
83	University of Utah School of Medicine																					83
84	University of Vermont College of Medicine						10												1		10	84
85	Medical College of Virginia	1																				85
86	University of Virginia Department of Medicine	1			2		1		2	2	6			1			3	1		2		86
87	West Virginia University School of Medicine																					87
88	University of Wisconsin Medical School				1							1	15		1							88
89	Marquette University School of Medicine				1								1									89
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	

E.—Eclectic; H.—Homeopathic; N.—Nondescript.

Marginal Number	21 Michigan 858	22 Minnesota 309	23 Mississippi 136	24 Missouri 469	25 Montana 39	26 Nebraska 234	27 Nevada 6	28 New Hampshire 48	29 New Jersey 842	30 New Mexico 7	31 New York 2003	32 North Carolina 247	33 North Dakota 73	34 Ohio 653	35 Oklahoma 111	36 Oregon 98	37 Pennsylvania 1001	38 Rhode Island 78	39 South Carolina 122	40 South Dakota 89	41 Tennessee 178	42 Texas 628	43 Utah 101	44 Vermont 80	45 Virginia 258	46 Washington 92	47 West Virginia 138	48 Wisconsin 320	49 Wyoming 8	50 Philippines, etc. 105	51 Foreign 314	Totals 18,652	Marginal Number
1	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	56	1
2	....	....	2	1	....	....	....	....	....	....	....	....	....	1	2	....	1	....	....	2	....	....	....	....	....	....	....	....	....	....	....	45	2
3	4	2	....	....	2	1	....	....	....	....	1	....	1	....	....	4	....	....	....	2	3	1	....	....	....	1	....	3	1	1	8	84	3
4	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	1	1	1	....	....	....	81	4
5	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	7	5
6	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	1	....	25	6
7	....	....	....	1	....	....	3	....	....	....	1	....	....	....	....	1	....	....	....	....	....	....	2	1	....	8	....	....	....	....	5	109	7
8	....	1	....	....	....	....	1	....	1	....	....	....	....	....	....	1	....	....	....	....	....	....	3	1	....	2	....	....	....	....	4	188	8
9	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	1	....	....	....	2	1	....	75	9
10	....	....	....	....	....	....	....	1	....	....	7	....	....	....	....	....	....	....	....	1	....	....	....	....	1	....	....	....	....	1	2	69	10
11	....	2	....	1	....	....	....	....	4	....	8	....	....	2	1	....	15	....	....	....	....	1	....	....	2	....	....	....	....	1	1	73	11
12	2	....	....	....	....	....	....	....	....	....	6	3	....	2	....	....	8	....	2	....	....	2	2	1	8	....	....	....	....	6	2	101	12
13	....	....	....	2	....	....	....	....	5	....	6	5	....	....	1	....	8	1	6	....	2	3	....	....	13	....	3	....	....	....	18	108	13
14	....	....	1	2	....	....	....	....	....	....	1	5	....	....	....	....	....	....	5	....	2	....	....	....	1	....	....	....	....	1	2	147	14
15	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	....	....	1	63	15
16	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	54	16
17	2	2	....	....	....	....	....	....	....	....	1	....	....	2	....	....	2	....	....	....	....	1	....	....	1	....	....	3	....	....	5	42	17
18	10	7	....	3	1	1	....	....	....	....	7	1	....	5	....	....	10	1	....	1	3	....	2	....	1	2	4	6	....	16	6	271	18
19	9	9	2	13	1	10	....	1	1	1	....	....	11	8	3	1	....	....	....	6	....	1	1	....	....	10	....	19	1	1	5	294	19
20	19	20	1	14	5	12	2	....	....	....	5	....	14	19	3	14	4	....	....	25	2	7	12	....	....	6	....	44	1	4	8	633	20
21	4	10	....	4	....	3	....	....	....	1	4	....	4	3	1	....	2	....	....	2	....	1	3	....	....	3	....	9	....	3	4	264	21
22	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	1	....	1	2	200	22
23	....	4	....	1	2	....	....	....	....	....	....	....	....	....	1	....	....	....	....	2	....	....	....	....	....	2	....	1	....	....	3	228	23
24	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4	24
25	....	....	....	10	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	2	....	136	25
26	1	1	1	4	2	....	....	....	1	....	2	....	....	4	1	....	1	....	1	....	2	5	....	....	2	1	7	1	....	....	99	26
27	....	....	38	3	....	....	....	....	....	....	....	4	....	1	1	....	1	....	1	1	2	32	....	....	1	....	....	1	....	7	....	275	27
28	....	....	....	....	....	....	....	3	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	45	28
29	5	....	....	8	2	3	....	....	9	1	35	13	5	26	....	1	26	6	6	1	12	14	....	....	24	3	5	6	1	1	7	374	29
30	1	....	....	1	....	....	....	1	9	....	14	20	....	3	....	....	14	2	5	....	....	....	3	....	13	....	23	....	....	15	7	225	30
31	....	....	....	....	1	....	....	1	....	....	7	2	....	....	1	....	3	2	1	....	....	....	....	....	....	....	....	....	....	2	9	60	31
32	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	35	32
33	2	6	....	5	....	5	....	6	7	....	20	4	....	11	3	3	14	22	1	....	....	4	4	4	4	3	....	7	1	1	18	390	33
34	1	....	....	....	....	....	....	17	1	1	4	....	....	1	....	....	3	32	....	....	....	....	....	1	....	....	....	....	....	3	6	358	34
35	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	77	35
36	140	5	....	8	1	2	....	....	3	....	34	1	1	47	2	....	35	....	2	2	1	3	1	1	....	9	....	6	....	....	10	361	36
37	20	....	....	....	....	....	....	....	....	....	1	....	1	3	....	1	....	....	1	....	....	....	....	....	....	....	1	1	....	....	....	31	37
38	112	....	....	....	....	....	....	....	....	....	2	....	....	4	1	....	3	....	....	1	....	....	....	....	....	....	....	1	....	....	7	122	38
39	2	204	....	5	6	1	....	....	....	....	2	....	11	2	....	2	....	....	....	7	....	....	....	....	1	7	....	15	....	....	3	286	39
40	....	....	41	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	1	....	....	....	....	....	....	....	....	....	1	48	40
41	....	1	....	48	....	....	....	....	....	....	6	....	....	2	1	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	3	65	41
42	....	....	....	52	....	1	....	....	....	....	....	....	....	....	8	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	97	42
43	2	7	....	43	....	4	....	....	2	1	....	....	....	2	....	4	3	....	1	2	1	3	....	....	....	5	....	1	....	....	4	136	43
44	....	....	....	38	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	38	44
45	5	5	....	85	3	2	....	....	....	....	2	....	1	28	....	....	1	....	....	2	....	4	1	....	....	1	....	8	....	1	4	253	45
46	....	1	3	85	....	....	....	....	....	....	1	....	3	1	4	1	....	....	....	3	....	1	1	....	....	....	1	8	....	....	3	156	46
47	....	5	....	....	9	41	....	....	....	....	....	....	....	....	....	1	....	....	....	9	....	....	1	....	....	1	....	1	....	1	....	....	92	47
48	....	1	....	2	....	133	....	....	....	....	....	....	....	....	....	....	....	....	....	4	....	....	....	....	....	....	....	....	1	3	3	162	48
49	....	....	....	....	1	....	....	7	3	....	9	....	....	....	....	....	1	....	....	....	....	....	....	3	....	....	....	....	....	....	....	34	49
50	....	....	....	....	....	....	....	....	1	....	61	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	66	50
51	1	....	....	....	....	....	....	....	....	....	174	....	....	1	....	....	5	....	....	....	....	....	....	....	....	....	....	....	....	....	....	188	51
52	2	....	....	3	....	....	....	7	68	1	338	3	....	2	....	2	1	1	1	....	3	5	12	1	3	2	1	9	....	1	8	526	52
53	....	....	....	....	....	....	....	....	22	....	147	....	....	3	....	....	5	2	....	....	....	....	....	3	2	....	....	....	....	1	2	206	53
54	....	....	....	....	....	....	....	....	29	....	187	....	....	....	....	....	2	1	....	....	....	....	....	1	....	....	....	....	....	....	....	243	54
55	....	....	....	....	....	....	....	....	20	....	336	....	....	....	....	....	3	....	....	....	....	....	1	1	....	....	....	....	....	....	4	370	55
56	....	....	....	....	....	....	....	....	9	....	73	....	....	1	....	....	2	1	....	....	....	2	....	....	....	....	....	....	....	....	48	143	56
57	....	....	1	1	....	....	....	....	56	....	311	2	....	....	....	1	2	2	....	....	2	....	1	....	1	....	....	1	....	1	3	403	57
58	....	....	....	....	....	....	....	....	2	....	119	....	....	....	....	....	3	....	....	....	....	....	....	....	1	....	....	....	....	....	7	132	58
59	....	....	....	....	....	....	....	....	....	....	....	47	....	....	....	....	....	....	1	....	....	....	....	....	2	....	....	....	....	....	....	51	59
60	....	....	....	....	....	....	....	....	....	....	....	31	....	....	....	....	....	....	1	....	....	....	....	....	1	....	....	....	....	....	....	35	60
61	....	....	....	....	....	....	....	....	....	....	....	....	19	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	21	61
62	1	....	....	....	....	4	....	....	....	....	2	....	....	51	1	....	3	....	....	....	....	....	....	....	....	....	4	....	....	....	....	86	62
63	3	1	....	1	....	....	....	....	....	....	1	....	....	106	1	....	3	....	....	....	....	....	....	....	2	....	13	....	....	2	1	168	63
64	....	....	1	....	....	....	....	....	....	....	2	....	....	136	....	....	11	....	....	1	....	....	7	....	....	....	5	1	....	....	3	180	64
65	....	....	....	....	....	....	....	....	....	....	....	....	....	101	....	....	1	....	....	....	....	....	....	....	....	....	2	1	....	....	....	111	65
66	....	....	....	....	....	....	....	....	....	....	....	....	....	28	....	....	1	....	....	....	....	1	....	....	....	....	1	....	....	....	2	34	66
67	....	....	....	....	....	....	....	....	....	....	1	....	....	....	63	....	....	....	....	....	....	2	....	....	....	....	....	....	....	1	1	73	67
68	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	55	....	....	....	....	....	....	....	....	....	7	....	....	....	....	1	66	68
69	....	2	....	1	....	....	....	....	14	....	5	....	....	12	....	2	80	....	....	....	....	....	....	....	2	....	2	2	....	....	1	138	69
70	....	4	4	9	2	5	....	....	25	....	16	41	1	14	....	1	212	3	5	1	3	4	7	....	3	7	10	4	....	....	20	451	70
71	....	....	....	....	....	....	....	....	7	....	5	1	....	....	....	1	66	....	....	....	....	....	....	....	2	....	....	....	....	5	4	95	71
72	2	2	3	7	1	3	....	1	29	....	8	22	....	2	....	1	275	....	3	1	8	4	8	....	7	10	10	4	....	3	11	467	72
73	....	....	....	....	....	....	....	....	6	....	6	4	....	2	....	....	26	....	....	....	2	....	....	....	3	....	....	1	....	....	2	66	73
74	....	....	....	....	....	....	....	....	....	....	1	....	....	9	....	....	135	....	....	....	....	....	....	....	....	....	....	....	....	....	....	147	74
75	....	....	....	....	....	....	....	....	....	....	2	3	....	1	....	....	....	....	56	....	....	....	....	....	1	....	....	....	....	....	1	66	75
76	2	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	12	....	....	....	....	....	....	....	....	....	....	....	19	76
77	....	....	4	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	44	3	1	....	....	2	....	....	1	....	63	77
78	....	....	2	....	....	....	....	....	....	....	....	....	....	....	3	....	....	....	1	....	....	5	....	....	....	....	....	....	....	2	1	18	78
79	1	....	18	5	....	2	....	....	....	....	2	6	....	3	4	....	....	....	12	....	16	18	....	....	5	....	....	....	....	12	175	79
80	....	....	2	1	....	....	....	....	....	....	....	1	....	....	1	....	....	....	3	....	56	13	....	....	1	....	....	....	....	1	2	114	80
81	1	....	....	1	....	....	....	....	....	....	3	1	....	....	3	....	1	....	....	....	....	92	....	....	....	....	....	....	....	9	3	126	81
82	....	....	....	1	....	....	....	....	....	....	....	1	....	....	1	....	1	....	....	....	....	198	....	....	....	....	....	....	....	1	3	209	82
83	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	26	....	....	....	....	....	....	....	2	28	83
84	....	....	....	....	....	....	....	2	7	....	11	....	....	1	....	....	2	2	....	....	1	....	....	41	....	....	....	....	....	1	1	90	84
85	....	....	11	....	....	....	....	....	1	....	3	22	....	1	....	....	1	....	1	....	1	....	....	....	85	....	4	....	....	1	2	123	85
86	....	....	....	....	....	....	....	....	....	....	1	4	....	....	....	....	....	....	3	....	5	1	....	....	63	....	2	....	....	....	1	112	86
87	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	36	....	....	1	....	39	87
88	2	....	....	....	....	....	....	1	....	....	1	....	1	1	....	....	1	....	....	....	....	....	....	....	....	....	....	91	....	1	1	118	88
89	2	5	....	....	....	1	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	62	....	....	....	72	89
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51		

Name of College	Enrolled During 1918-19					
	1st year	2d year	3d year	4th year	5th year	Total
University of Alabama School of Medicine	26	19	7	4	...	56
University of Arkansas Medical Dept.	7	19	9	8	...	43
College of Medical Evangelists	43	19	17	5	...	84
College of Phys. and Surgs., Los Angeles	22	21	7	31	...	81
Oakland College of Med. and Surg.	...	1	4	2	...	7
Coll. of Phys. & Surgs. of San Francisco	1	4	16	4	...	25
Leland Stanford Junior Univ. Sch. of Med.	26	31	15	16	21	109
University of California Medical School	65	52	29	20	22	188
University of Colorado School of Med.	15	17	22	21	...	75
Yale University School of Medicine	21	16	20	12	...	69
Georgetown University School of Med.	22	23	16	12	...	73
George Washington Univ. Med. School	27	28	33	13	...	101
Howard University School of Medicine	23	28	33	24	...	108
Emory University School of Medicine	41	53	38	25	...	147
University of Georgia Medical Dept.	19	21	15	8	...	63
Chicago Hospital College of Medicine	17	11	13	13	...	54
Hahnemann Medical College and Hospital of Chicago.—H.	8	6	9	19	...	42
Loyola University School of Medicine	9	112	80	70	...	271
Northwestern University Medical School	74	48	83	89	...	294
Rush Medical College (Univ. of Chicago)	116	116	148	174	79	633
University of Illinois College of Medicine	55	71	88	50	...	264
Indiana University School of Medicine	43	66	57	34	...	200
State University of Iowa College of Med.	69	57	58	44	...	228
State University of Iowa College of Homeopathic Medicine.—H.	...	1	2	1	...	4
University of Kansas School of Medicine	35	53	27	21	...	136
University of Louisville Medical Dept.	8	48	25	18	...	99
Tulane Univ. of Louisiana Sch. of Med.	55	61	86	73	...	275
Bowdoin Medical School	7	10	11	17	...	45
Johns Hopkins Univ. Medical Dept.	90	86	104	94	...	374
University of Maryland School of Medicine and College of Phys. and Surgs.	32	79	71	53	...	235
Boston University School of Medicine	26	11	11	12	...	60
College of Phys. and Surgs., Boston*	8	10	11	6	...	35
Medical School of Harvard University	109	90	100	100	...	399
Tufts College Medical School	87	98	84	89	...	358
Middlesex College of Med. and Surg.—N.*	18	27	21	11	...	77
University of Michigan Medical School	122	102	81	56	...	361
Univ. of Michigan Homeo. Med. Sch.—H.	14	2	4	11	...	31
Detroit College of Medicine and Surgery	11	51	41	29	...	132
University of Minnesota Medical School	82	75	64	65	...	286
University of Mississippi School of Med.	28	20	...	...	...	48
University of Missouri School of Med.	26	39	...	...	...	65
Kansas City Coll. of Med. & Surg.—N.*	18	19	28	32	...	97
Kansas City Univ. of Phys. and Surgs.—N.	6	13	13	104	...	136
St. Louis College of Phys. and Surgs.*	13	6	8	24	...	51
St. Louis University School of Medicine	46	82	66	59	...	253
Washington University Medical School	37	22	47	50	...	156
John A. Creighton Medical College	26	25	21	20	...	92
University of Nebraska College of Med.	32	53	43	34	...	162
Dartmouth Medical School	16	18	...	...	...	34
Albany Medical College	14	18	21	13	...	66
University of Buffalo Medical Dept.	19	64	59	41	...	183
Columbia Univ. Coll. of Phys. & Surgs.	101	162	125	138	...	526
Cornell University Medical College	73	53	51	29	...	206
Fordham University School of Medicine	51	72	57	63	...	243
Long Island College Hospital	77	118	108	67	...	370
New York Homeopathic Medical College and Flower Hospital.—H.	10	54	36	43	...	143
University and Bellevue Hosp. Med. Coll.	86	118	115	84	...	403
Syracuse University College of Medicine	41	33	36	22	...	132
University of North Carolina Sch. of Med.	22	29	...	...	...	51
Wake Forest College School of Medicine	16	19	...	...	...	35
University of North Dakota Sch. of Med.	8	13	...	...	...	21
Eclectic Medical College, Cincinnati.—E.	18	18	22	28	...	86
University of Cincinnati College of Med.	48	48	43	29	...	168
Western Reserve Univ. School of Med.	43	39	54	44	...	180
Ohio State Universsty College of Med.	36	33	25	17	...	111
Ohio State Univ. Coll. of Homeo. Med.—H.	17	8	2	9	...	36
University of Oklahoma School of Med.	24	20	17	12	...	73
University of Oregon Medical School	20	17	14	15	...	66
Hahnemann Medical College and Hospital of Philadelphia.—H.	18	55	40	25	...	138
Jefferson Medical College of Philadelphia	75	63	171	142	...	451
Temple University Department of Med.	6	26	23	40	...	95
University of Pennsylvania Sch. of Med.	111	99	132	125	...	467
Woman's Med. College of Pennsylvania	31	16	12	7	...	66
University of Pittsburgh School of Med.	43	39	36	29	...	147
Medical Coll. of the State of So. Carolina	22	16	14	14	...	66
University of South Dakota Coll. of Med.	8	11	...	...	...	19
University of Tennessee College of Med.	5	19	18	21	...	63
University of West Tennessee Med. Dept.	6	5	2	5	...	18
Meharry Medical College	42	47	41	45	...	175
Vanderbilt University School of Medicine	18	43	28	25	...	114
Baylor University College of Medicine	32	38	34	22	...	126
University of Texas Dept. of Medicine	54	39	65	51	...	209
University of Utah School of Medicine	10	18	...	...	...	28
University of Vermont College of Med.	12	35	23	20	...	90
Medical College of Virginia	42	30	27	24	...	123
University of Virginia Dept. of Medicine	26	30	29	27	...	112
West Virginia University School of Med.	26	13	...	...	...	39
University of Wisconsin Medical School	68	50	...	...	...	118
Marquette University School of Medicine	24	19	16	14	...	73
Totals for 1919	3104	3587	3272	2967	122	13052
Totals for 1918	4283	3521	2893	2933	...	13630
Totals for 1917	4107	3117	2866	3674	...	13764

* Figures approximate.

H, Homeopathic; E, Eclectic; N, Nondescript.

(Continued from page 503)

year from the New York colleges. In 1915 and previous years the Illinois colleges were in the lead. Illinois had 132 graduates this year holding baccalaureate degrees, followed by Pennsylvania with 114, Massachusetts with 104, and Maryland with 101. The percentage of graduates holding collegiate degrees is rapidly increasing and will continue to increase, since all the better medical schools are now requiring two years of college work for admission, which brings more students in reach of the combined course for the B.S. and M.D. degrees.

WOMEN IN MEDICINE

During the past year there were 686 women studying medicine, or 105 more than last year, and 76 more than in 1917. This increase is probably due to the war emergency and the resulting demand for physicians. The percentage of women to all medical students this year is 5.2, a larger percentage than that of any previous year. There were 107 women graduates this year, one more than last year, but 46 less than in 1917. Of all the women matriculants, 66 were in attendance at the one medical college for women, while 620 (90.4 per cent.) were matriculated in the fifty-nine coeducational colleges. From the one women's college there were 7 graduates, while 100 (93.4 per cent.) secured their degrees from coeducational colleges. This increase of women students in coeducational colleges is not surprising, since in recent years some of the largest and oldest medical schools, as Columbia, Tulane, the University of Pennsylvania, Harvard and Western Reserve University (and McGill University in Canada), have thrown open their doors to women.

NUMBER OF COLLEGES

Since June 30, 1918, five colleges (mentioned on page 514) were closed, leaving 85 still existing, of which 76 are nonsectarian (regular), 5 are homeopathic, 1 is eclectic and 3 are nondescript. Two of the nondescript colleges are not recognized by the licensing board of Missouri, the state in which they are located.

LENGTH OF TERMS

During the last nineteen years there has been a decided lengthening of college terms. This has reference to the weeks of actual work exclusive of holidays.

(Continued on page 512)

Names of existing colleges are in heavy faced type

Number	Name and Address	Organized or Name Assumed	First Class Graduated	Years[1] when No Classes Graduated	Closed or Changed Title	For Subsequent or Previous Title see Line	Admission Requirements: 1 Yr. College	Admission Requirements: 2 Yrs. College	Classification by the Council on Medical Education	Key No. in American Medical Directory
1.	Alabama, Medical College of, Mobile	1859	1860	1862-68[1]	1907	2	....	....	.....	Ala.2
2.	**Alabama, University of, School of Medicine,** Mobile	1907	1908	.....	....	1	1914	1915	A,'07-'19	Ala.2
3.	**Albany Medical College,** Albany, N. Y.	1838	1839	.....	.....		1914	1918	A,'07-'19	N.Y.3
4.	American College of Medicine and Surgery, Eclectic,[2] Chicago	1901	1903	.....	1907	43	....	....	B,'07	Ill.22
5.	American College of Medicine in Pennsylvania, Philadelphia[3]	1853	....	.....	1880	300	....	....	.....	Pa.34
6.	American Medical College, Eclectic, St. Louis[4]	1873	1874	.....	1912	264	....	....	C,'07-'12	Mo. 10
7.	American Medical College, Eclectic, Cincinnati	1839	....	.....	1857	.....	....	....	.....	Ohio 30
8.	American Medical Missionary College, Chicago	1895	1899	.....	1910	.....	....	....	B,'07-'10	Ill.19
9.	Arkansas Industrial University, Medical Department, Little Rock	1879	1880	.....	1899	10	....	....	.....	Ark.1
10.	**Arkansas, University of, Medical Department,** Little Rock	1890	1890	.....	....	9	1915	1918	B,'07-'18; A,'19	Ark.1
11.	Atlanta College of Physicians and Surgeons, Atlanta[5]	1898	1899	.....	1913	12	....	....	A,'07-'09; B,'10-'13	Ga.11
12.	Atlanta Medical College, Atlanta	1854	1855	1862-64	1898	11	....	....	.....	Ga.5
	Atlanta Medical College, reestablished	1913	1914	.....	1917	118	1914	1918	A,'14-'17	Ga.5
13.	Atlanta School of Medicine, Atlanta[5]	1905	1906	.....	1913	12	....	....	A,'07-'09; B,'10-'13	Ga.12
14.	Atlantic Medical College, Baltimore	1907	1908	.....	1910	223	....	....	C,'09-'10	Md.8
15.	Baltimore Medical College, Baltimore	1881	1882	.....	1913	.....	....	....	A,'07-'13	Md.4
16.	Baltimore University School of Medicine, Baltimore	1884	1885	.....	1907	.....	....	....	C,'07	Md.6
17.	Barnes Medical College, St. Louis	1892	1893	.....	1911	264	....	....	B,'07-'11	Mo.28
18.	**Baylor University School of Medicine,** Dallas, Tex.	1903	1903	.....	....	309	1913	1918	B,'07-'15; A,'16-'19	Tex.4
19.	Beach Medical Institute, Indianapolis	1884	1885	.....	1886	164	....	....	.....	Ind.15
20.	Beaumont Hospital Medical College, St. Louis	1886	1887	.....	1901	212	....	....	.....	Mo.24
21.	Bell Medical College, Dallas, Tex.	1903	1904	.....	1905	82	....	....	.....	Tex.8
22.	Bellevue Hospital Medical College, New York City	1861	1872	.....	1898	360	....	....	.....	N.Y.10
23.	Bennett College of Eclectic Medicine and Surgery, Chicago	1868	1870	.....	1908	24-211	....	....	B,'07-'08	Ill.8
24.	Bennett Medical College, Chicago	1908	1909	.....	1915	23-211	1915	....	B,'09-'15	Ill.8
25.	Berkshire Medical College, Pittsfield, Mass.	1823	1824	.....	1867	.....	....	....	.....	Mass.2
26.	Birmingham Medical College, Birmingham, Ala.	1894	1895	.....	1915	.....	....	....	A,'07-'09; B,'10-'15	Ala.4
27.	**Boston University School of Medicine,** Boston[6]	1873	1874	.....	....	.....	1914	1916	A,'07-'19	Mass.5
28.	**Bowdoin Medical School,** Portland, Me.	1915	1915	.....	....	232	1912	1916	A,'15-'19	Me.1
29.	Brown University, Medical Department, Providence, R. I.	1811	1814	.....	1827	.....	....	....	.....	R.I.1
30.	**Buffalo, University of, Department of Medicine,** Buffalo, N. Y.	1846	1847	.....	.....		1914	1918	A,'07-'19	N.Y.6
31.	California Eclectic Medical College, Los Angeles	1907	1908	.....	1915	32	....	....	C,'07-'15	Cal.4
32.	California Medical College, San Francisco[7]	1879	1880	.....	1900	31	....	....	.....	Cal.4
33.	California, University of, Medical School, San Francisco	1872	1873	.....	....	253	....	1905	A,'07-'19	Cal.2
34.	Castleton Medical Academy, Castleton, Vt.	1818	....	.....	1821	412-35	....	....	.....	Vt.1
35.	Castleton Medical College, Castleton, Vt.	1841	....	.....	1861	34-412	....	....	.....	Vt.1
36.	Central College of Physicians and Surgeons, Indianapolis	1879	1880	.....	1905	167	....	....	.....	Ind.9
37.	Central Medical College of St. Joseph (Mo.)	1894	1895	.....	1905	119	....	....	.....	Mo.29
38.	Chaddock School of Medicine, Quincy, Ill.	1888	1888	.....	1890	308	....	....	.....	Ill.12
39.	Charity Hospital Medical College, Cleveland	1864	1865	.....	1879	408	....	....	.....	O.11
40.	Charity Hospital Medical College, New Orleans	1873	....	.....	1877	.....	....	....	.....	La.3
41.	Chattanooga Medical College, Chattanooga, Tenn.[8]	1889	1890	.....	1910	.....	....	....	B,'07-'08; C,'09-'10	Tenn.9
42.	Chattanooga National Medical College, Tenn. (colored)	1899	....	[1901-02]	1908	.....	....	....	C,'07-'08	Tenn.18
43.	Chicago College of Medicine and Surgery, Chicago	1907	1908	.....	1917	4-211	1915	1918	B,'07-'17	Ill.22
44.	Chicago Homeopathic Medical College, Chicago	1876	1877	.....	1904	.....	....	....	.....	Ill.10
45.	**Chicago Hospital College of Medicine, Chicago**[9]	1911	1915	.....	.....	.....	....	....	C,'11-'19	Ill.42
46.	Chicago Medical College, Chicago	1864	1865	.....	1891	202-284	....	....	.....	Ill.6
47.	Chicago Physio-Medical College, Chicago	1891	1892	.....	1899	48-62	....	....	.....	Ill.5
48.	Chicago Physio-Medical Institute, Chicago	1885	1886	.....	1891	47-62	....	....	.....	Ill.5
49.	Cincinnati College of Medicine and Surgery Cincinnati	1849	1852	.....	1902	.....	....	....	.....	Ohio 8
50.	Cincinnati Medical College, Cincinnati	1834	....	.....	1846	224	....	....	.....	Ohio 27
51.	**Cincinnati, University of, College of Medicine**	1911	1912	.....	....	224-289	1910	1913	A,'12-'19	Ohio 41
52.	Cleveland College of Physicians and Surgeons, Cleveland[10]	1906	1906	.....	1913	408	....	....	A,'07-'13	Ohio 12
53.	Cleveland Homeopathic Medical College	1898	1899	.....	1910	55-56	....	....	B,'07-'10	Ohio 26
54.	Cleveland Medical College, Cleveland[11]	1843	1844	.....	1881	422	....	....	.....	Ohio 6
55.	Cleveland Medical College, Homeopathic	1890	1891	.....	1898	55	....	....	.....	Ohio 23
56.	Cleveland-Pulte Medical College, Cleveland	1910	1911	.....	1914	53-307	....	....	B,'10-'11; C,'12-'14	Ohio 24
57.	Cleveland University of Medicine and Surgery, Cleveland.—H.	1894	1895	.....	1898	53-149-418	....	....	.....	Ohio 7
58.	Clinical School of Medicine, Woodstock, Vt.	1827	....	.....	1830	411	....	....	.....	Vt.3
59.	College of American Medicine and Surgery, Macon, Ga.	1874	1875	1877-81	1884	310-321	....	....	.....	Ga.8
60.	Coll. of Homeo. M. & S. of Kansas City Univ., Kansas City, Mo.	1896	1897	.....	1900	224	....	....	.....	Mo.31
61.	**College of Medical Evangelists,** Loma Linda, Calif.	1909	1914	.....	....	.....	1914	1915	C,'10-'17; B,'18-'19	Cal.12
62.	College of Medicine and Surgery, Physio-Medical, Chicago	1899	1900	.....	1911	48-47	....	....	C,'07-'11	Ill.5
63.	College of Medicine of Maryland, Baltimore	1807	1810	.....	1812	376	....	....	.....	Md.1
64.	College of Philadelphia, Department of Medicine (Pa.)	1765	1768	1772-79	1791	238	....	....	.....	Pa.1
65.	College of Physicians and Surgeons, Little Rock, Ark.	1906	1907	.....	1911	.....	....	....	B,'07-'11	Ark.2
66.	**College of Physicians and Surgeons,** Los Angeles[12]	1903	1905	.....	....	.....	1914	1916	B,'07-'19	Cal.9
67.	College of Physicians and Surgeons of San Francisco (Calif.)	1896	1897	.....	‡	.....	....	....	B,'07; C,'08-'19	Cal.7
68.	College of Physicians and Surgeons, Chicago	1882	1883	.....	1911	371	....	....	A,'07-'11	Ill.11
69.	Coll. of Phys. & Surgs. of the Upper Mississippi, Rock Island, Ill.	1848	1849	.....	1849	.....	....	....	.....	Ill.24
70.	College of Physicians and Surgeons of Indiana, Indianapolis	1873	1874	.....	1878	221	....	....	.....	Ind.6
71.	College of Physicians and Surgeons, Keokuk, Ia.[13]	1849	1850	.....	1899	69-372	....	....	.....	Ia.1
72.	College of Physicians and Surgeons, Kansas City, Kan.	1894	1895	.....	1905	373	....	....	.....	Kan 4
73.	College of Physicians and Surgeons of Baltimore (Md.)	1872	1873	.....	1915	376	1914	....	A,'07-'11; B,'12; A,'13-'15	Md.3
74.	**College of Physicians and Surgeons,** Boston	1880	1882	.....	....	.....	....	....	C,'07-'19	Mass.6
75.	College of Physicians and Surgeons of Kansas City (Mo.)	1869	1870	.....	1880	184	....	....	.....	Mo.8

NOTE AND REFERENCES

The above colleges are known to have had a bona fide existence in accordance with the dates shown. Information regarding other institutions to which there is some question or which were reported as fraudulent or not in good standing in the states in which they existed may be obtained in the American Medical Directory.

The purpose of this list is to give the dates when each institution existed under the name given; the years when there were no graduates; the years when the institution required for admission, respectively, one year and two years of collegiate work, and the rating of the college by the Council on Medical Education. Full information in regard to each institution under its various names may be found in the American Medical Directory, key number of which is given in the last column.

‡ Ceased medical teaching in 1918 but retains a nominal existence until 1921 in order to grant degrees to the three remaining classes which are completing their medical instruction elsewhere.

1. Dates separated by a hyphen indicate that the intervening years are included among the years when there were no graduates; not so if separated by a comma. Figures in brackets indicate the only years for which the records show there were graduates.

2. Eclecticism dropped in 1905. In 1907 changed its name to the Chicago College of Medicine and Surgery and became by affiliation the medical department of Valparaiso (Ind.) University.

3. Was organized under this title and was also known as the Eclectic Medical College of Philadelphia. Former title dropped in 1856. Name changed in 1865 to the Philadelphia University of Medicine and Surgery. Under this title, according to report, it became a fraudulent institution during the last few years of its existence. Extinct in 1880.

4. Two classes graduated each year 1874 to 1883 inclusive; since then one class each year.

5. In 1913 the Atlanta College of Physicians and Surgeons merged with the Atlanta School of Medicine and reassumed the name of Atlanta Medical College.

6. This was a homeopathic medical school until 1918 when it became nonsectarian.

7. Was located in Oakland, California, 1879 to 1887.

8. Was the medical department of Grant University, which in 1908 changed its name to the University of Chattanooga.

9. Has advertised under the title "Fort Dearborn Hospital Medical School" and, more recently, as the "Chicago Medical School."

10. This was the medical department of the Ohio Wesleyan University.

11. Sometimes referred to as the Hudson Medical College.

12. In 1909, became the Medical Department of the University of Southern California.

13. Went under the name "Medical Department of the University of Iowa" from 1854 to 1870 inclusive.

Number	Name and Address	Organized or Name Assumed	First Class Graduated	Years[1] when No Classes Graduated	Closed or Changed Title	For Subsequent or Previous Title see Line	Admission Requirements: 1 Yr. College	Admission Requirements: 2 Yrs College	Classification by the Council on Medical Education	Key No. in American Medical Directory
76.	College of Physicians and Surgeons of St. Joseph (Mo.)	1878	1879	.....	1882	331	....	....	.....	Mo.15
77.	College of Physicians and Surgeons of St. Louis (Mo.)	1869	1870	.....	1873	333	....	....	.....	Mo.7
78.	College of Physicians and Surgeons in the City of New York	1807	1811	.....	1896	85–86–194	....	....	.....	N.Y.1
79.	Coll. of P. & S. of the Western Dist. of N. Y., Fairfield, N. Y.[14]	1812	1816	.....	1840	.....	....	....	.....	N.Y.2
80.	College of Phys. and Surgs., Homeopathic, Buffalo, N. Y.[15]	1879	1880	.....	1884	.....	....	....	.....	N.Y.17
81.	College of Physicians and Surgeons, Memphis, Tenn.	1906	1907	.....	1911	.....	....	....	B,'07-'11	Tenn.8
82.	College of Physicians and Surgeons, Dallas, Tex.	1905	1905	.....	1910	21	....	....	C,'07-'10	Tex.8
83.	Colorado School of Medicine, Boulder	1883	1885	1899	1907	84	....	....	A,'07	Colo.2
84.	**Colorado, University of, School of Medicine**, Denver	1907	1908	.....	....	83	....	1910	A,'07-'19	Colo.2
85.	Columbia College, Medical Faculty, New York City	1792	1793	1798-1801, 1808,'9, '11,'14	1814	78-194	....	....	.....	N.Y.1
86.	**Columbia University College of Phys. and Surgs.**, New York City	1896	1897	.....	....	78–85–194	....	1910	A,'07-'19	N.Y.1
87.	Columbian College, Medical Department, Washington, D. C.	1825	1826	1834,'38, '61-'63	1873	89–130	....	....	.....	D.C.1
88.	Columbian Medical College, Kansas City, Mo.	1898	1899	.....	1901	.....	....	....	.....	Mo.41
89.	Columbian University Medical Department, Washington, D. C.	1873	1874	.....	1904	87–130	....	....	.....	D.C.1
90.	Columbus Medical College, Columbus, Ohio	1875	1876	.....	1892	340	....	....	.....	Ohio 14
91.	Cooper Medical College, San Francisco	1882	1883	.....	1912	401–226	....	....	A,'07-'12	Cal.1
92.	**Cornell University Medical College**, New York City	1898	1899	.....	....	.....	....	1908	A,'07-'19	N.Y.20
93.	**Creighton (John A.) Medical College**, Omaha, Neb.	1892	1893	.....	.....	176	1914	1918	A,'07-'11; B,'12-'16; A,'17-'19	Neb.6
94.	Curtis Physio-Medical Institute, Marion-Indianapolis, Ind.	1881	1882	.....	1900	.....	....	....	.....	Ind.12
95.	Dallas Medical College, Dallas, Tex.	1900	1901	.....	1904	18	....	....	.....	Tex.10
96.	**Dartmouth Medical School**, Hanover, N. H.*[16]	1797	1798	[16]	....	.....	....	1910	A,'07-'19	N.H.1
97.	Dayton Medical University, Dayton, Ohio	1886	1887	.....	1889	.....	....	....	.....	Ohio 37
98.	Dearborn Medical College, Chicago	1903	1904	.....	1907	.....	....	....	C,'07	Ill.23
99.	Denver and Gross College of Medicine, Denver	1902	1903	.....	1911	84	....	....	A,'07-'11	Colo.5
100.	Denver College of Medicine, Denver	1881	1882	.....	1902	99	....	....	.....	Colo.1
101.	Denver College of Physicians and Surgeons, Denver	1908	1909	.....	1909	102–422	....	....	C,'08-'09	Colo.4
102.	Denver Homeopathic College, Denver	1894	1895	.....	1907	101–422	....	....	C,'07	Colo.4
103.	Detroit College of Medicine, Detroit	1885	1886	.....	1913	104	....	....	A,'07-'11; B,'12-'13	Mich.7
104.	**Detroit College of Medicine and Surgery**, Detroit	1913	1914	.....	....	103	1914	1918	A,'13-'19	Mich.7
105.	Detroit Homeopathic College, Detroit	1899	1900	.....	1912	.....	....	....	C,'07-'12	Mich.11
106.	Detroit Homeopathic Medical College, Detroit	1871	....	.....	1876	.....	....	....	.....	Mich.3
107.	Detroit Medical College, Detroit	1868	1869	.....	1885	103	....	....	.....	Mich.2
108.	Drake University, College of Medicine, Des Moines, Iowa	1903	1904	.....	1913	170–171	....	....	A,'07-'13	Ia.6
109.	Dunham Medical College, Chicago	1895	1896	.....	1902	148	....	....	.....	Ill.18
110.	Eclectic College of Medicine and Surgery, Cincinnati	1856	1857	.....	1859	115	....	....	.....	Ohio 31
111.	Eclectic College of Physicians and Surgeons, Indianapolis	1890	1891	.....	1894	.....	....	....	.....	Ind.16
112.	Eclectic Medical College of Indiana, Indianapolis	1900	1903	.....	1908	.....	....	....	C,'07-'08	Ind.17
113.	**Eclectic Medical College**, Cincinnati	1910	1910	.....	....	115	1915	1918	B,'10-'19	Ohio 2
114.	Eclectic Medical College of the City of New York	1866	1867	.....	1913	.....	....	....	C,'07-'13	N.Y.13
115.	Eclectic Medical Institute, Cincinnati	1845	1846	.....	1910	113–437	....	....	B,'07-'10	Ohio 2
116.	Eclectic Medical University, Kansas City, Kan.	1907	1907	.....	1908	117–418	....	....	C,'07-'08	Kan.7
117.	Eclectic Medical University, Kansas City, Mo.†[17]	1898	1900	1907-09	1918	116–418	....	....	C,'09-'18	Mo.33
118.	**Emory University School of Medicine**, Atlanta, Ga.	1917	1918	.....	....	12	1914	1918	A,'17-'19	Ga.5
119.	Ensworth-Central Medical College, St. Joseph, Mo.	1905	1905	.....	1907	120	....	....	B,'07	Mo.22
120	Ensworth Medical College, St. Joseph, Mo.[18]	1888	1889	1892	1905	119				
	Reestablished	1907	1908	.....	1914	119	....	....	B,'07-'09; C,'10-'14	Mo.22
121.	Epworth College of Medicine, Oklahoma City	1904	1907	.....	1910	390	....	....	C,'07-'10	Okla.2
122.	Flint Medical College of New Orleans University, New Orleans	1901	1902	1911	1911	272	....	....	B,'07-'08; C,'09-'11	La.4
123.	Fordham University School of Medicine, New York City	1907	1909	.....	1919	.....	1911	1918	B,'08-'09; A,'10-'12; B,'13; A,'14-'19	N.Y.43
124.	Fort Wayne College of Medicine, Fort Wayne, Ind.	1879	1880	1899	1905	167	....	....	.....	Ind.10
125.	Fort Worth School of Medicine, Fort Worth Tex.[19]	1894	1895	.....	1918	.....	1916	....	A,'07-'09; B,'10-'11; C,'12-'13; B,'14-'18	Tex.3
126.	Franklin Medical College, Philadelphia	1847	....	.....	1852	.....	....	....	.....	Pa.5
127.	Galveston Medical College, Galveston, Tex.	1864	....	.....	1873	332	....	....	.....	Tex.2
128.	Gate City Medical College, Texarkana, Tex.†	1902	1904	1909-10	1911	.....	....	....	C,'07-'11	Tex.7
129.	Geneva Medical College, Geneva, N. Y.	1861	1862	.....	1872	229	....	....	.....	N.Y.4
130.	**George Washington University Medical School**, Washington, D. C.	1904	1905	.....	....	87–89	1914	1918	A,'07-'19	D.C.1
131.	**Georgetown University School of Medicine**, Washington, D. C.	1851	1552	.....	....	.....	....	1912	A,'07-'11; B,'12; A,'13-'19	D.C.2
132.	Georgia College of Eclectic Medicine and Surgery, Atlanta	1886	1887	.....	1916	133	....	....	C,'07-'16	Ga.9
133.	Georgia Eclectic Medical College, Atlanta	1877	1878	.....	1886	132	....	....	.....	Ga.9
134.	**Georgia, University of, Medical Department**, Augusta	1873	1874	.....	....	220	1914	1918	A,'07-'09; B,'10-'12; A,'13-'19	Ga.1
135.	Graffenburg Institute, Dadeville, Ala.	1852	1856	.....	1862	.....	....	....	.....	Ala.1
136.	Grand Rapids Medical College, Grand Rapids, Mich.	1897	1898	.....	1907	.....	....	....	B,'07	Mich.10
137.	Gross Medical College, Denver	1887	1888	.....	1902	99	....	....	.....	Colo.3
138.	Hahnemann Hospital College of San Francisco	1888	1889	.....	1902	139–144	....	....	.....	Cal.5
139.	Hahnemann Medical College, San Francisco	1881	1884	.....	1888	138–144	....	....	.....	Cal.5
140.	**Hahnemann Medical College and Hospital**, Chicago	1859	1861	.....	....	.....	1914	1916	A,'07-'11; B,'12-'19	Ill.4
141.	**Hahnemann Medical College and Hospital of Philadelphia**	1885	1886	.....	....	142–151	1914	1917	A,'07-'19	Pa.9
142.	Hahnemann Medical College of Philadelphia	1869	1870	.....	1885	141–151	....	....	.....	Pa.9,18
143.	Hahnemann Medical College of the Kansas City University (Mo.)	1900	1901	.....	1902	60–181	....	....	.....	Mo.31
144.	Hahnemann Medical College of the Pacific, San Francisco	1902	1903	.....	1918	139–138	1915	....	A,'07-'09; B,'10-'18	Cal.5
145.	Hampden Sydney College Medical Department, Richmond, Va.	1838	1839	.....	1854	228	....	....	.....	Va.4
146.	**Harvard University, Medical School of**, Boston	1782	1788	.....	....	.....	....	1900	A,'07-'19	Mass.1
147.	Harvey Medical College, Chicago	1891	1895	.....	1905	.....	....	....	.....	Ill.13
148.	Hering Medical College, Chicago	1892	1893	.....	1913	.....	....	....	C,'07-'13	Ill.15
149.	Homeopathic Hospital College, Cleveland	1870	1871	.....	1894	57–417–419	....	....	.....	Ohio 7
150.	Homeopathic Medical College of Missouri, St. Louis	1859	1860	1862-64	1909	.....	....	....	C,'07-'09	Mo.5
151.	Homeopathic Medical College of Pennsylvania, Philadelphia	1848	1849	.....	1869	142–141	....	....	.....	Pa.9
152.	Homeopathic Med. Coll. of the State of New York, New York City	1858	1861	.....	1869	274	....	....	.....	N.Y.9
153.	Homeopathic Medical College for Women, Cleveland	1868	....	.....	1870	149	....	....	.....	Ohio 33
154.	Hospital College of Medicine, Louisville[20]	1874	1875	.....	1907	.....	....	....	B,'07	Ky.5
155.	Hospital Medical College, Eclectic, Atlanta	1908	1900	.....	1911	.....	....	....	C,'08-'11	Ga.18
156.	Hospital Medical College of Evansville (Ind.)	1882	1883	.....	1886	.....	....	....	.....	Ind.13
157.	**Howard University School of Medicine**, Washington, D. C.	1869	1871	.....	....	.....	1910	1914	B,'07-'09; A,'10-'19	D.C.3

* Offers only the first two years of the medical course.

† Reported fraudulent or not in good standing in the state in which the college is located.

14. Sometimes referred to as the "Fairfield Medical School."

15. For the first year (1879-80) this college bore the title: "Homeopathic College of Physicians and Surgeons."

16. Graduated its last class in 1914 when clinical teaching was abandoned.

17. Removed to Kansas City, Kansas, in 1907, changed its name in 1908 to the Western Eclectic College of Medicine and Surgery; returned to Kansas City, Mo. in 1909 and resumed its former title. Was reported not recognized by the Missouri State Board of Health. Extinct 1918.

18. This school in 1905 was merged with the Central Medical College, St. Joseph, Missouri, taking the name of the Ensworth-Central Medical College. In 1907, however, the college reassumed the name of the Ensworth Medical College. It became extinct in 1914.

19. This was the medical department of Fort Worth University 1894 to 1911; of the Texas Christian University 1911 to 1918.

20. This was the medical department of the Central University of Kentucky.

Number	Name and Address	Organized or Name Assumed	First Class Graduated	Years[1] when No Classes Graduated	Closed or Changed Title	For Subsequent or Previous Title see Line	Admission Requirements: 1 Yr. College	Admission Requirements: 2 Yrs. College	Classification by the Council on Medical Education	Key No. in American Medical Directory
158.	**Humboldt Medical College, St. Louis**[21]	1859	....	.....	1869	332	....	....	.....	Mo.4
160.	**Hygeia Medical College, Cincinnati**†	1903	1866	1897	1859	.....	..	....	.....	Ohio 39
161.	**Illinois College Medical Department, Jacksonville**	1843	....	.....	1848	.....	...	....	.....	Ill.2
162.	**Illinois Medical College, Chicago**	1894	1895	.....	1910	.....	....	....	B,'07; C,'08-'10	Ill.17
163.	**Illinois, University of, College of Medicine, Chicago**	1911	1912	.....	....	73	1913	1914	A,'07-'19	Ill.11
164.	**Indiana Eclectic Medical College, Indianapolis**	1880	1881	.....	1890	.....	....	....	.....	Ind.11
165.	**Indiana Medical College, Indianapolis**	1869	1870	.....	1878	221	....	....	.....	Ind.4
166.	**Indiana Medical College, La Porte, Ind.**[22]	1844	....	.....	1849	.....	....	....	.....	Ind.1
167.	**Indiana Med. Coll., School of Med. of Purdue Univ., Indianapolis**	1905	1906	1908	1908	168	....	....	A,'07-'08	Ind.18
168.	**Indiana University School of Medicine, Indianapolis**	1903	1908	.....	....	.....	1909	1910	A,'07-'19	Ind.20
169.	**International Medical Missionary College, Atlanta**	1904	1906	.....	1908	.....	....	....	C,'07-'08	Ga.17
170.	**Iowa College of Physicians and Surgeons, Des Moines**[23]	1882	1883	.....	1903	108-171	....	....	.....	Ia.6
171.	**Iowa Medical College, Eclectic, Des Moines**	1881	1882	.....	1887	170	....	....	.....	Ia.6
172.	**Iowa, State University of, College of Homeo. Med., Iowa City**	1877	1878	1914	1919	.....	....	1910	A,'07-'19	Ia.4
173.	**Iowa, State University of, College of Medicine, Iowa City**	1869	1871	.....	....	.....	....	1909	A,'07-'19	Ia.3
174.	**Jefferson Medical College of Philadelphia**	1825	1826	.....	.....	.....	1914	1917	A,'07-'19	Pa.2
175.	**Jenner Medical College, Chicago**	1892	1896	.....	1918	.....	....	....	C,'07-'18	Ill.16
176.	**John A. Creighton Medical College, Omaha, Neb.**	1892	1893	.....	....	93	1914	1918	A,'07-'11; B,'12-'16; A,'17-'19	Nebr.6
177.	**Johns Hopkins University Medical Department, Baltimore**	1887	1897	.....	....	.....	....	1893	A,'07-'19	Md.7
178.	**Joplin College of Physicians and Surgeons, Joplin, Mo.**	1880	1881	.....	1884	.....	....	....	.....	Mo 17
179.	**Kansas City College of Med. and Surg., Kansas City, Kan.**	1897	1898	.....	1898	234	....	....	.....	Kan.6
180.	**Kansas City College of Med. and Surg., Kansas City, Mo.**†[24]	1915	1916	.....	....	.....	....	....	[24]	Mo.43
181.	**Kansas City Hahnemann Medical College (Mo.)**	1902	1903	.....	1915	327	....	....	C,'07-'09; B,'10-'11; C,'12-'15	Mo.35
182.	**Kansas City Homeopathic Medical College (Mo.)**	1888	1889	.....	1902	181	....	....	.....	Mo.26
183.	**Kansas City Hospital College of Medicine (Mo.)**	1882	1883	.....	1888	.....	....	....	.....	Mo.21
184.	**Kansas City Medical College (Mo.)**	1880	1881	.....	1905	75	....	....	.....	Mo.8
185.	**Kansas Medical College, Independence**	1872	1874	.....	1875	.....	....	....	.....	Kan.1
186.	**Kansas Medical College, Topeka**[25]	1890	1892	1901	1913	.....	....	....	B,'07-'13	Kan.3
187.	**Kansas, University of, School of Medicine, Lawrence**	1880	1906	.....	....	.....	....	1909	A,'07-'11; B,'12; A,'13-'19	Kan.2
188.	**Kemper College Medical Department, St. Louis**	1840	1841	.....	1845	282-253	....	....	.....	Mo.1
189.	**Kentucky School of Medicine, Louisville**	1850	1851	.....	1908	356	....	....	B,'07-'08	Ky.1
190.	**Kentucky University Medical Department, Louisville**	1898	1899	1907	1907	356	....	....	B,'07	Ky.9
191.	**Keokuk Medical College, Keokuk, Iowa**	1890	1891	.....	1899	192	....	....	.....	Ia.9
192.	**Keokuk Medical College, Coll. of Phys. & Surgs., Keokuk, Ia.**	1899	1900	.....	1908	191	....	....	B,'07-'08	Ia.10
193.	**King Eclectic Medical College, Des Moines**	1883	1884	.....	1889	.....	....	....	.....	Ia.7
194.	**King's College Medical Faculty, New York City**	1767	1769	1770	1774	78-85-86	....	....	.....	N.Y.1
195.	**Knoxville College Medical Department (colored), Knoxville, Tenn.**	1895	....	.....	1900	196	....	....	.....	Tenn.12
196.	**Knoxville Medical College (colored), Knoxville, Tenn.**	1900	1900	1906,'07	1910	195	....	....	C,'07-'10	Tenn 13
197.	**Laura Memorial Woman's Medical College, Cincinnati**	1895	1896	.....	1903	306	....	....	.....	Ohio 21
198.	**Leland Stanford Junior University School of Med., San Francisco**	1908	1913	.....	....	91	....	1909	A,'08-'19	Cal.11
199.	**Leonard Medical College, Raleigh, N. C.**[26]	1882	1886	1887, 1915-'18	1918	.....	....	1914	C,'07-'09; B,'10-'11; C,'12-'13; B,'14-'18	N.C.5
200.	**Lincoln Medical College, Eclectic, Lincoln, Neb.**[27]	1890	1891	.....	1918	.....	....	....	C,'07-'19	Nebr.4
201.	**Lincoln Memorial University Medical Dept., Knoxville, Tenn.**	1909	1910	.....	1917	350	....	....	B,'07-'09; C,'10-'14; B,'15-'17	Tenn.10
202.	**Lind University, Medical Department of, Chicago**	1859	1860	.....	1864	46-284	....	....	.....	Ill.6
203.	**Long Island College Hospital, Brooklyn**	1858	1860	.....	....	.....	1914	1918	A,'07-'11; B,'12-'14; A,'15-'19	N.Y.8
204.	**Louisiana, Medical College of, New Orleans**	1834	1835	.....	1847	205-358	....	....	.....	La.1
205.	**Louisiana, University of, Medical Department, New Orleans**	1847	1848	1863-65	1884	204-358	....	....	.....	La.1
206.	**Louisville and Hospital Medical College, Louisville**	1907	1908	.....	1908	.....	....	....	B,'07-'08	Ky.11
207.	**Louisville Medical College Louisville**	1869	1870	.....	1907	206	....	....	B,'07	Ky.4
208.	**Louisville Medical Institute, Louisville**	1837	1838	.....	1846	210-375	....	....	.....	Ky.2
209.	**Louisville National Medical College, Louisville**	1888	1889	.....	1912	.....	....	....	B,'07-'08; C,'09-'12	Ky.7
210.	**Louisville, University of, Medical Department, Louisville**	1846	1847	1863	....	208	1914	1918	B,'07-'09; A,'10-'19	Ky.2
211.	**Loyola University School of Medicine, Chicago**	1915	1916	.....	....	23-24-43	1915	1918	B,'15-'19	Ill.8
212.	**Marion Sims-Beaumont Medical College, St. Louis**	1901	1902	.....	1903	20-213-337	....	....	.....	Mo.34
213.	**Marion Sims College of Medicine, St. Louis**	1890	1891	.....	1901	212	....	....	.....	Mo.27
214.	**Marquette University School of Medicine, Milwaukee**	1912	1913	.....	....	245	1913	1915	B,'13-'14; A,'15-'19	Wis.6
215.	**Maryland Medical College, Baltimore**	1808	1809	.....	1913	.....	....	....	.....	Md.9
216.	**Maryland, Univ. of, Sch. of Med. and Coll. of P. & S., Baltimore**	1812	1813	.....	....	.....	1914	1918	A,'07-'11; B,'12; A,'13-'19	Md.1
217.	**Medical College of Alabama, Mobile**	1859	1860	1862-68	1907	2	....	....	A,'07	Ala.2
218.	**Medical College of Evansville (Ind.)**	1849	1850	1854-71	1884	.....	....	....	.....	Ind.2
219.	**Medical College of Fort Wayne (Ind.)**	1876	1877	.....	1883	.....	....	....	.....	Ind.7
220.	**Medical College of Georgia, Augusta**	1829	1883	1862-63	1873	134-370	....	....	.....	Ga.1
221.	**Medical College of Indiana, Indianapolis**[28]	1878	1879	.....	1905	167-105	....	....	.....	Ind.8
222.	**Medical College of Kansas City (Mo.)**	1869	1870	.....	1873	.....	....	....	.....	Mo.11
223.	**Medical College of Louisiana, New Orleans**	1834	1835	.....	1847	205-358	....	....	.....	La.1
224.	**Medical College of Ohio, Cincinnati**[29]	1819	1821	.....	1909	51	....	....	A,'07-'09	Ohio 1
225.	**Medical College of South Carolina, Charleston**	1823	1825	.....	1838	227	....	....	.....	S.C.1
226.	**Medical College of the Pacific, San Francisco**	1873	1874	.....	1882	91-401	....	....	.....	Cal.1
227.	**Medical College of the State of South Carolina, Charleston**[30]	1832	1833	1862-65	....	225	1914	1916	A,'07-'09; B,'10-'11; C,'12; B,'13-'15; A,'16-'19	S.C.1
228.	**Medical College of Virgina, Richmond**	1854	1855	.....	....	145-361	1914	1915	A,'07-'19	Va.4
229.	**Medical Institution of Geneva, Geneva, N. Y.**	1834	1835	1854	1861	129	....	....	.....	N.Y.4
230.	**Medical Institution of Yale College, New Haven, Conn.**	1812	1814	.....	1879	438	....	....	.....	Conn.1
231.	**Medical School of Harvard University, Boston**	1782	1788	.....	....	.....	....	1900	A,'07-'19	Mass.1
232.	**Medical School of Maine, Brunswick-Portland**	1820	1821	.....	1915	28	....	....	A,'07-'15	Me.1
233.	**Medical School of the Valley of Virginia, Winchester**	1826	....	.....	1861	.....	....	....	.....	Va.2

* Offers only the first two years of the medical course.

† Reported fraudulent or not in good standing in the state in which the college is located.

21. Was known as St. Louis College of Medical and Natural Sciences from 1855 to 1859; as Humboldt Institute from 1859 to 1866, and as Humboldt Medical College 1866 to 1869.

22. From 1844 to 1845 was known as the Medical Department of La Porte University.

23. In 1887 this college became the medical department of Drake University with the title the Iowa Medical College, Eclectic — also known as the Iowa Eclectic Medical College. Name changed to Drake University College of Medicine in 1903.

24. Kansas City College of Medicine and Surgery claims to be an eclectic medical college, but is reported not recognized as such by the National Eclectic Medical Association. It is an offshoot of the Eclectic Medical University, an institution which during its existence was rated in Class C by the Council on Medical Education. The new college has refused inspections by the Council on Medical Education and is reported not recognized by the licensing board of Missouri — its home state — and thirty-two other states.

25. This became the Medical Department of Washburn College in 1908.

26. This was the medical department of Shaw University. The last class graduated in 1914 when it discontinued clinical teaching. It was closed in 1918.

27. This was the medical department of Cotner University from 1911 to 1915 when the relationship was cancelled. Extinct in 1918.

28. This was the medical department of Butler University from 1879-1883 and of the University of Indianapolis from 1895 to 1905.

29. Became the medical department of the University of Cincinnati in 1896 but retained its former name till 1909 when it merged with the Miami Medical College to form the Ohio-Miami Medical College of the University of Cincinnati.

30. This institution and the Medical College of South Carolina were conducted as separate institutions from 1832 to 1838 when they were merged.

Number	Name and Address	Organized or Name Assumed	First Class Graduated	Years[1] when No Classes Graduated	Closed or Changed Title	For Subsequent or Previous Title see Line	Admission Requirements: 1 Yr. College	Admission Requirements: 2 Yrs. College	Classification by the Council on Medical Education	Key No. in American Medical Directory
234.	Medico-Chirurgical College of Kansas City (Mo.)	1898	1899	.....	1905	179	....	....	.....	Mo.32
235.	Medico-Chirurgical College of Philadelphia	1881	1882	.....	1916	.....	1914	....	A,'07-'16	Pa.11
236.	**Meharry Medical College** (colored), Nashville[31]	1876	1877	.....	....	.....	1915	1918	B,'07-'09; A,'10-'13; B,'14-'19	Tenn.7
237.	Memphis Hospital Medical College	1880	1881	.....	1913	.....	....	....	B,'07-'13	Tenn.8
238.	Memphis Medical College	1854	....	1861-68	1873	.....	....	....	.....	Tenn.2
239.	Miami Medical College, Cincinnati	1852	1853	1858-65	1909	51	....	....	A,'07-'09	Ohio 9
240.	Michigan College of Medicine, Detroit	1880	1881	.....	1885	103	....	....	.....	Mich.6
241.	Michigan College of Medicine and Surgery, Detroit	1888	1889	.....	1907	.....	....	....	C,'07	Mich.8
242.	**Michigan, University of, Medical School,** Ann Arbor	1850	1851	.....	....	.....	....	1909	A,'07-'19	Mich.1
243.	**Michigan, University of, Homeopathic Med. School,** Ann Arbor	1875	1877	.....	....	.....	1912	1916	A,'07-'19	Mich.5
244.	**Middlesex College of Medicine and Surgery,** Cambridge, Mass.[32]	1914	1915	.....	....	.....	....	....	C,'15-'19	Mass.15
245.	Milwaukee Medical College, Milwaukee	1894	1895	.....	1913	214	....	....	B,'07-'11; C,'12-'13	Wis.3
246.	Minneapolis College of Physicians and Surgeons, Minneapolis[33]	1883	1884	.....	1911	.....	....	....	B,'07-'11	Minn.5
247.	Minnesota College Hospital, Minneapolis	1881	1882	.....	1885	248	....	....	.....	Minn.3
248.	Minnesota Hospital College, Minneapolis	1885	1886	.....	1888	247-250	....	....	.....	Minn.3
249.	Minnesota, University of., Coll. of Homeo. Med., Minneapolis	1888	1889	.....	1909	250	....	....	A,'07-'09	Minn.6
250.	**Minnesota, University of, Medical School,** Minneapolis[34]	1883	1880	.....	....	.....	....	1907	A,'07-'19	Minn.4
251.	Mississippi Medical College, Meridian	1906	1907	.....	1912	.....	....	....	C,'07-'12	Miss.2
252.	**Mississippi, University of, School of Medicine,** University*[35]	1903	1910	[1910]	....	.....	1914	1918	A,'07-'19	Miss.1
253.	Missouri Medical College, St. Louis[36]	1855	1856	1862-65	1899	188-417	....	....	.....	Mo.1
254.	**Missouri, University of, School of Medicine,** Columbia	1845	1846	[37]	....	.....	1906	1910	A,'07-'19	Mo.3
255.	Montezuma University Medical College, Besemer, Ala.	1896	1897	.....	1898	.....	....	....	.....	Ala.5
256.	Nashville Medical College	1876	1877	.....	1879	351	....	....	.....	Tenn 6
257.	Nashville, University of, Medical Department[38]	1850	1852	.....	1909	351	....	....	B,'07-'09	Tenn.1
258.	National Homeopathic Medical College, Washington, D. C.	1893	1894	.....	1896	414	....	....	.....	D.C.5
259.	National Homeopathic Medical College, Chicago	1891	1892	.....	1895	209	....	....	.....	Ill.14
260.	National Medical College, Chicago	1895	1896	.....	1900	259-261	....	....	.....	Ill.14
261.	National Medical University, Chicago	1900	1901	.....	1909	259-260	....	....	C,'07-'09	Ill.14
262.	National Normal University, College of Medicine, Lebanon, Ohio	1889	1889	.....	1896	.....	....	....	.....	Ohio 22
263.	National University Medical Department, Washington, D. C.	1884	1885	.....	1903	89	....	....	.....	D.C.4
264.	National University of Arts and Sciences, Med. Dept., St. Louis	1912	1913	.....	1918	6	....	....	C,'12-'18	Mo.10
265.	Nebraska College of Medicine, Lincoln	1907	1907	.....	1909	.....	....	....	C,'07-'09	Nebr.7
266.	Nebraska, University of, College of Medicine, Eclectic, Lincoln	1883	1884	.....	1885	.....	....	....	.....	Nebr.2
267.	Nebraska, University of, College of Medicine, Homeo., Lincoln	1883	1884	.....	1887	.....	....	....	.....	Nebr.3
268.	**Nebraska, University of, College of Medicine,** Omaha	1902	1903	.....	....	294	1908	1909	A,'07-'19	Nebr.5
269.	Nebraska, University of, College of Medicine, Regular, Lincoln	1870	1884	[1884-87]	1887	.....	....	....	.....	Nebr.1
270.	New England Female Medical College, Homeopathic, Boston	1848	1849	.....	1874	27	....	....	.....	Mass.3
271.	New Orleans School of Medicine, New Orleans	1856	....	.....	1870	.....	....	....	.....	La.2
272.	New Orleans University Medical College, New Orleans	1889	1892	1896	1901	122	....	....	.....	La.4
273.	New York Free Medical College for Women, New York City	1871	1873	[1873-75]	1876	.....	....	....	.....	N.Y.35
274.	**New York Homeo. Med. Coll. and Flower Hospital,** New York City	1869	1870	.....	....	152	1915	1919	A,'07-'14; B,'15-'19	N.Y.9
275.	New York Medical College, New York City	1850	1851	.....	1864	.....	....	....	.....	N.Y.7
276.	New York Medical College and Hosp. for Women, New York City	1863	1864	.....	1918	.....	1916	1918	B,'07-'11; C,'12-'18	N.Y.11
277.	New York University Medical College, New York City	1896	1897	.....	1898	360	....	....	.....	N.Y.5
278.	Niagara University Medical Department, Buffalo	1883	1886	.....	1898	30	....	....	.....	N.Y.18
279.	North Carolina Medical College, Charlotte	1893	1893	.....	1918	.....	....	....	B,'07; C,'08-'14; B,'15-'18	N.C.4
280.	**North Carolina, University of, School of Medicine,** Chapel Hill*	1879	1903	[1903-1909]	....	.....	1910	1917	A,'07-'19	N.C.1
281.	**North Dakota, University of, School of Medicine,** University*	1905	....	.....	....	.....	....	1907	A,'07-'19	N.D.1
282.	Northwestern Medical College, St. Joseph, Mo.	1879	1881	.....	1894	.....	....	....	.....	Mo.18
283.	Northwestern Ohio Medical College, Toledo	1883	1884	.....	1891	.....	....	....	.....	Ohio 18
284.	**Northwestern University Medical School,** Chicago	1891	1891	.....	....	46-202	1908	1911	A,'07-'19	Ill.6
285.	Northwestern University Woman's Medical School, Chicago	1892	1893	.....	1902	429-430	....	....	.....	Ill.9
286.	Oakland College of Medicine and Surgery, Oakland, Calif.	1900	1906	.....	‡	.....	1915	....	A,'07-'09; B,'10-'17; C,'18	Cal.8
287.	Oglethorpe Medical College, Savannah, Ga.	1856	....	.....	1861	.....	....	....	.....	Ga.6
288.	Ohio Medical University, Columbus	1890	1893	.....	1907	341	....	....	A,'07	Ohio 25
289.	Ohio-Miami Medical College, Cincinnati	1909	1910	.....	1911	51	....	....	A,'09-'11	Ohio 41
290.	**Ohio State University College of Homeo. Medicine,** Columbus	1914	1915	.....	....	56	1915	1916	C,'14-'16; B,'17-'19	Ohio 42
291.	**Ohio State University College of Medicine,** Columbus	1914	1915	.....	....	341	1914	1915	A,'14-'19	Ohio 40
292.	Oklahoma Medical College, Oklahoma City	1907	....	.....	1909	.....	....	....	C,'07-'09	Okla.4
293.	**Oklahoma, University of, School of Medicine,** Oklahoma City[39]	1900	1911	.....	....	.....	1914	1917	A,'07-'11; B,'12-'19	Okla.1
294.	Omaha Medical College, Omaha, Neb.[40]	1881	1882	.....	1902	267	....	....	.....	Nebr.5
295.	**Oregon, University of, Medical School,** Portland	1887	1888	1898	....	.....	1910	1915	A,'07-'19	Ore.2
296.	Penn. Medical University, Philadelphia	1855	....	1867-74	1881	.....	....	....	.....	Pa.8
297.	Pennsylvania Medical College, Philadelphia	1839	....	.....	1861	.....	....	....	.....	Pa.3
298.	**Pennsylvania, University of, School of Medicine,** Philadelphia	1791	1792	.....	....	64	1909	1910	A,'07-'19	Pa.1
299.	Philadelphia College of Medicine and Surgery	1846	....	.....	1859	296	....	....	.....	Pa.4
300.	Philadelphia University of Medicine and Surgery[41]	1865	....	.....	1880	5	....	....	.....	Pa.14
301.	Physio-Medical College, Cincinnati	1836	1837	.....	1880	.....	....	....	.....	Ohio 4
302.	Physio-Medical College of Indiana, Indianapolis	1873	1874	.....	1909	.....	....	....	C,'07-'09	Ind.5
303.	Physio-Medical College of Texas, Dallas	1902	1902	.....	1908	.....	....	....	C,'07-'08	Tex.5
304.	Physio-Medical Institute, Cincinnati	1859	....	.....	1885	.....	....	....	.....	Ohio 10

* Offers only the first two years of the medical course.

‡Ceased medical teaching in 1918 but retains a nominal existence until 1921 in order to grant degrees to the three remaining classes which are completing their medical instruction elsewhere.

31. This was the medical department of Central Tennessee College which in 1900 became Walden University. The relationship was canceled in 1916.

32. The Middlesex College of Medicine and Surgery is a nondescript institution which for several years has occupied the same building with the Massachusetts College of Osteopathy and, on inspection, the two were found to be almost indistinguishable. It has granted liberal advanced standing for courses taken in osteopathic institutions. It secured the old uncanceled charter of the Worcester Medical College of Boston, otherwise, it could hardly have obtained a charter under the strict laws now regulating the chartering of educational institutions in Massachusetts. Its predecessor was an eclectic, botanico-medical affair chartered in 1848 which had a rather precarious existence. It underwent a reorganization in 1852; moved to Boston in 1857; returned to Worcester in 1858, and became extinct in 1859. The new medical school has affiliated itself with schools of dentistry, pharmacy, chiropody, optometry, etc., under the high sounding title of the "University of Massachusetts." According to report, the latter has not secured authority from the state to grant degrees in arts or sciences and its name has not been found on the list of colleges or universities approved by any recognized standardizing agency. The medical school is rated in Class C by the Council on Medical Education and is reported as not recognized by the medical licensing boards of thirty-six states.

33. Degrees from 1884 to 1887 inclusive were granted by the University of Minnesota. It was the medical department of Hamline University from 1895 to 1911. It ceased to conduct classes in 1908 and the three remaining classes completed their instruction in the University of Minnesota Medical School with which it was merged, but Hamline University granted the degrees.

34. Was an examining body only until 1888 when it absorbed the consolidation of the Saint Paul Medical College and the Minneapolis Hospital College.

35. Offers only first two years of the medical course. Taught clinical courses at Vicksburg during the session of 1909-10 and in 1910 graduated its one class. Clinical teaching was then abandoned.

36. Sometimes known as the McDowell Medical College.

37. No classes were graduated in 1857, 1858, 1860 to 1873 inclusive, 1887 to 1890 inclusive, 1892 and 1902. From 1845 to 1855 was located in St. Louis. Reorganized at Columbia in 1872. Last class was graduated in 1909 when clinical teaching was discontinued.

38. The University of Nashville Medical Department and Vanderbilt University Medical Department united in 1874, each school granting degrees each year to a portion of the class. Relationship dissolved in 1895. Similar union with the University of Tennessee Medical Department 1909 to 1911.

39. Taught only the subjects of the first two years of the medical course until 1910 when the clinical department was established.

40. From 1891 to 1902 this was the medical department of Omaha University.

41. In the last few years of its existence this college is reported to have been fraudulent.

Number	Name and Address	Organized or Name Assumed	First Class Graduated	Years[1] when No Classes Graduated	Closed or Changed Title	For Subsequent or Previous Title see Line	Admission Requirements: 1 Yr. College	Admission Requirements: 2 Yrs. College	Classification by the Council on Medical Education	Key No. in American Medical Directory
305.	**Pittsburgh, University of, School of Medicine**	1908	1909	.....	....	420	1911	1913	B,'07-'09; A,'10-'19	Pa.12
306.	Presbyterian Hospital and Woman's Med. Coll., Cincinnati	1891	1892	.....	1895	197	....	....	.....	Ohio 24
307.	Pulte Medical College, Cincinnati	1872	1873	.....	1910	56	....	....	B,'07-'09; C,'10	Ohio 13
308.	Quincy College of Medicine, Quincy, Ill.	1882	1883	.....	1888	38	....	....	.....	Ill.12
309.	Randolph Macon Coll. Med. Dept., Prince Edward Ct. House, Va.	1840	....	.....	1855	.....	....	....	.....	Va.5
310.	Reform Medical College of Georgia, Macon	1854	1855	1861-67	1874	39-321	....	....	.....	Ga.2
311.	Reliance Medical College, Chicago	1907	1909	.....	1911	.....	....	....	C,'07-'11	Ill.39
312.	**Rush Medical College**, Chicago	1843	1844	.....	.....	.....	1902	1904	A,'07-'19	Ill.1
313.	Saginaw Valley Medical College, Saginaw, Mich.	1896	1897	.....	1908	241	....	....	.....	Mich.9
314.	Savannah Medical College, Savannah, Ga.	1853	1854	1862-66, 1876-80	1880	.....	....	....	.....	Ga.4
315.	Sewanee Medical College, Sewanee, Tenn.	1892	1898	.....	1909	.....	....	....	C,'07-'09	Tenn.11
316.	Shelby Medical College, Nashville	1858	....	.....	1862	.....	....	....	.....	Tenn.4
317.	Sioux City College of Medicine, Sioux City, Iowa	1890	1893	.....	1909	.....	....	....	B,'07-'08; C,'09	Ia.8
318.	**South Carolina, Medical College of the State of**, Charleston[30]	1832	1833	1862-65	....	225-227	1914	1916	A,'07-'09; B,'10-'11; C,'12; B,'13-'15; A,'16-'19	S.C.1
319.	South Carolina, University of, Medical Department, Charleston	1866	....	.....	1876	.....	....	....	.....	S.C.2
320.	**South Dakota, University of, College of Medicine**, Vermillion*	1907	....	.....	....	.....	1908	1909	A,'07-'19	S.D.1
321.	Southern Botanico-Medical College, Macon, Ga.	1839	1841	.....	1854	310-59	....	....	.....	Ga.2
322.	Southern College of Medicine and Surgery, Atlanta[42]	1911	1912	.....	1914	.....	....	....	C,'11-'14	Ga.19
323.	Southern Homeopathic Medical College, Baltimore	1890	1892	.....	1907	14	....	....	B,'07	Md.8
324.	Southern Medical College, Atlanta	1878	1880	.....	1898	11	....	....	.....	Ga.10
325.	Southern Methodist University Medical Department, Dallas, Tex.	1911	1912	.....	1915	329	1914	....	B,'11; C,'12-'13; B,'14-'15	Tex.6
326.	Southern University Medical Department, Greensboro, Ala.	1872	....	.....	1880	.....	....	....	.....	Ala.3
327.	Southwest School of Medicine and Hospital, Kansas City, Mo.	1915	1916	.....	1916	181	....	....	C,'15-'16	Mo.35
328.	Southwestern Homeo. Medical College and Hospital, Louisville	1892	1894	.....	1910	.....	....	....	C,'07-'10	Ky.8
329.	Southwestern University Medical College, Dallas, Tex.	1903	1904	.....	1911	325	....	....	B,'07-'11	Tex.6
330.	St. Joseph Hospital Medical College, St. Joseph, Mo.	1876	1878	.....	1882	331	....	....	.....	Mo.14
331.	St. Joseph Medical College, St. Joseph, Mo.	1882	1883	.....	1888	120	....	....	.....	Mo.22
332.	St. Louis College of Medical and Natural Sciences, St. Louis	1855	....	.....	1859	158	....	....	.....	Mo.4
333.	**St. Louis College of Physicians and Surgeons**, St. Louis	1879	1880	1916	....	77	....	....	B,'07-'08; C,'09-'19	Mo.7
334.	St. Louis Hahnemann Medical College, St. Louis[43]	1873	1874	.....	1874	.....	....	....	.....	Mo.19
335.	St. Louis Medical College, St. Louis[44]	1855	1856	.....	1891	415	....	....	.....	Mo.2
336.	St. Louis University Medical Department, St. Louis	1842	1843	.....	1855	335	....	....	.....	Mo.2
337.	**St. Louis University School of Medicine**, St. Louis	1903	1904	.....	....	212	1910	1918	A,'07-'19	Mo.34
338.	St. Louis Woman's Medical College, St. Louis	1894	1895	.....	1896	.....	....	....	.....	Mo.37
339.	St. Paul Medical College, St. Paul[45]	1885	1886	.....	1888	380	....	....	.....	Minn.2
340.	Starling Medical College, Columbus, Ohio	1847	1848	.....	1907	341	....	....	A,'07	Ohio 2
341.	Starling-Ohio Medical College, Columbus, Ohio	1907	1908	.....	1914	291	....	....	A,'07-'14	Ohio 40
342.	State College of Physicians and Surgeons, Indianapolis[46]	1906	1907	.....	1907	168	....	....	A,'07	Ind.21
343.	State University of Iowa Coll. of Homeo. Medicine, Iowa City	1877	1878	1914	1919	.....	....	1910	A,'07-'19	Ia.4
344.	**State University of Iowa College of Medicine**, Iowa City	1869	1871	.....	....	.....	1909	1910	A,'07-'19	Ia.3
345.	State University Medical Department (colored), Louisville	1899	....	.....	1903	209	....	....	.....	Ky.10
346.	**Syracuse University College of Medicine**, Syracuse, N. Y.	1875	1876	.....	....	347	1909	1910	A,'07-'19	N.Y.15
347.	Syracuse University College of Phys. and Surgs., Syracuse, N. Y.	1872	1873	.....	1875	129-346	....	....	.....	N.Y.15
348.	Tallahassee College of Med. and Surg., Jacksonville, Fla.	1883	1884	[1884]	1886	.....	....	....	.....	Fla.1
349.	**Temple University Department of Medicine**, Philadelphia	1901	1904	.....	....	.....	1914	1918	C,'07-'09; B,'10-'19	Pa.13
350.	Tennessee Medical College, Knoxville	1889	1890	.....	1900	201	....	1910	B,'07-'09	Tenn. 6
351.	**Tennessee, University of, College of Medicine**, Memphis	1879	1880	.....	....	256	1914	1918	B,'07-'11; C,'12; B,'13; A,'14-'19	Tenn. 3
352.	Texas Medical College and Hospital, Galveston	1873	1874	[1874-81, '90, '91]	1891	127	....	....	.....	Tex.1
353.	**Texas, University of, Department of Medicine**, Galveston	1891	1892	.....	....	.....	1910	1917	A,'07-'19	Tex.2
354.	Toland Medical College, San Francisco	1863	1864	.....	1872	33	....	....	.....	Cal.2
355.	Toledo Medical College, Toledo, Ohio	1883	1883	.....	1914	.....	....	....	B,'07-'11; C,'12-'14	Ohio 19
356.	Transylvania University Medical Department, Lexington, Ky.	1817	1817	.....	1850	189	....	....	.....	Ky.1
357.	**Tufts College Medical School**, Boston	1893	1894	.....	....	.....	1914	1918	A,'07-'19	Mass.7
358.	**Tulane University of Louisiana School of Medicine**, New Orleans	1884	1885	.....	....	204-205	1910	1918	A,'07-'19	La.1
359.	United States Medical College, New York City	1878	1881	[1881-82]	1884	.....	....	....	.....	N.Y.16
360.	**University and Bellevue Hospital Medical College**, New York City	1898	1899	.....	....	22-277	1912	1918	A,'07-'19	N.Y.19
361.	University College of Medicine, Richmond, Va.[47]	1893	1894	.....	1913	228	....	....	A,'07-'13	Va.6
362.	University Medical College, Kansas City, Mo.	1888	1889	.....	1913	374	1910	....	A,'07-'13	Mo.20
363.	**University of Alabama School of Medicine**, Mobile	1907	1908	.....	....	217	1914	1915	A,'07-'19	Ala.2
364.	**University of Arkansas Medical Department**, Little Rock	1899	1900	.....	....	9	1915	1918	B,'07-'18; A,'19	Ark.1
365.	**University of Buffalo Department of Medicine**, Buffalo, N. Y.	1846	1847	.....	....	.....	1914	1918	A,'07-'19	N.Y.6
366.	**University of California Medical School**, San Francisco	1872	1873	.....	....	353	....	1905	A,'07-'19	Cal.2
367.	**University of Cincinnati College of Medicine**, Cincinnati	1911	1912	.....	....	224-289	1910	1913	A,'11-'19	Ohio 4
368.	**University of Colorado School of Medicine**, Denver	1907	1908	.....	....	83	....	1910	A,'07-'19	Colo.2
369.	University of Dallas Medical Department, Dallas, Tex.	1900	1901	.....	1908	18	....	....	.....	Tex.4
370.	**University of Georgia Medical Department**, Augusta	1873	1874	.....	....	220	1914	1918	A,'07-'09; B,'10-'12; A,'13-'19	Ga.1
371.	**University of Illinois College of Medicine**, Chicago	1911	1912	.....	....	68	1913	1914	A,'11-'19	Ill.11
372.	University (State) of Iowa Medical Department, Keokuk	1854	1855	.....	1870	71-344	....	....	.....	Ia.1
373.	**University of Kansas School of Medicine**, Lawrence	1880	1906	.....	....	....	....	1909	A,'07-'11; B,'12; A,'13-'19	Kan.2
374.	University of Kansas City Medical Dept., Kansas City, Mo.	1881	1882	.....	1888	302	....	....	.....	Mo.20
375.	**University of Louisville Medical Department**, Louisville	1846	1847	1863	....	208	1914	1918	B,'07-'09; A,'10-'19	Ky.2
376.	**Univ. of Maryland Sch. of Med. & Coll. of P. & S.**, Baltimore	1812	1813	.....	....	63	1914	1918	A,'07-'11; B,'12; A,'13-'19	Md.1
377.	**University of Michigan Homeopathic Medical School**, Ann Arbor	1875	1877	.....	....	.....	1912	1916	A,'07-'19	Mich.5
378.	**University of Michigan Medical School**, Ann Arbor	1850	1851	.....	....	.....	....	1909	A,'07-'19	Mich.1
379.	University of Minnesota College of Homeo. Med., Minneapolis	1888	1889	.....	1909	250	....	....	A,'07-'09	Minn.6
380.	**University of Minnesota Medical School**, Minneapolis[34]	1883	1889	.....	....	.....	....	1907	A,'07-'19	Minn.4
381.	**University of Mississippi School of Medicine**, University* [35]	1903	1910	[1910]	....	.....	1914	1918	A,'07-'19	Miss.1
382.	**University of Missouri School of Medicine**, Columbia*	1845	1846	[37]	....	.....	1906	1910	A,'07-'19	Mo.3
383.	University of Nashville Medical Department, Nashville, Tenn.[38]	1850	1852	.....	1909	351	....	....	B,'07-'09	Tenn.1
384.	**University of Nebraska College of Medicine**, Omaha	1902	1903	.....	....	294	1908	1909	A,'07-'19	Nebr.5
385.	University of Nebraska College of Med., Eclectic Dept. Lincoln	1883	1884	.....	1885	.....	....	....	.....	Nebr.2
386.	University of Nebraska College of Med., Homeo. Dept., Lincoln	1883	1884	.....	1887	.....	....	....	.....	Nebr.3
387.	University of Nebraska College of Med., Regular Dept., Lincoln	1870	1884	[1884-87]	1887	.....	....	....	.....	Nebr.
388.	**University of North Carolina School of Medicine**, Chapel Hill*	1879	1903	[1903-09]	....	.....	1910	1917	A,'07-'19	N.C.1
389.	**University of North Dakota School of Medicine**, University*	1905	....	.....	....	.....	....	1907	A,'07-'19	N.D.1
390.	**University of Oklahoma School of Medicine**, Oklahoma City[39]	1900	1911	.....	....	.....	1914	1917	A,'07-'11; B,'12-'19	Okla.1
391.	**University of Oregon Medical School**, Portland	1887	1888	1898	....	.....	1910	1915	A,'07-'19	Ore.2

* Offers only the first two years of the medical course.

42. The charter of this institution passed into the hands of individuals who sold, or offered for sale its diplomas for a year or two after the college had ceased to exist. Most of such diplomas which were discovered were dated as of 1914.

43. Graduated one class of four students.

44. Known sometimes as "Pope's Medical College."

45. Was conducted as a preparatory school from 1871 to 1879.

46. Taught work of third and fourth years of the medical course supplementary to the two year course given by the Indiana University School of Medicine with which it was affiliated.

Number	Name and Address	Organized or Name Assumed	First Class Graduated	Years[1] when No Classes Graduated	Closed or Changed Title	For Subsequent or Previous Title see Line	Admission Requirements: 1 Yr. College	Admission Requirements: 2 Yrs. College	Classification by the Council on Medical Education	Key No. in American Medical Directory
392.	**University of Pennsylvania School of Medicine**, Philadelphia	1791	1792	.....	....	64	1909	1910	A,'07-'19	Pa.1
393.	**University of Pittsburgh School of Medicine**	1908	1909	.....	....	420	1911	1913	B,'07-'09; A,'10-'19	Pa.12
394.	University of South Carolina Medical Department, Charleston	1866	....	.....	1876	.....	....	....	.....	S.C.2
395.	**University of South Dakota College of Medicine**, Vermilion*	1907	....	.....	....	.....	1908	1909	A,'07-'19	S.D.1
396.	University of Southern California College of Med., Los Angeles	1885	1888	.....	1909	33	....	....	A,'07-'09	Cal.6
397.	**Univ. of Southern Calif. Coll. of Phys. & Surgs.**, Los Angeles[12]	1903	1905	.....	....	66	1914	1916	B,'07-'19	Cal.9
398.	**University of Tennessee College of Medicine**, Memphis[38]	1879	1880	.....	...	256	1914	1918	B,'07-'11; C,'12; B,'13; A,'14-'19	Tenn.6
399.	**University of Texas Department of Medicine**, Galveston	1891	1892	.....	....	.....	1910	1917	A,'07-'19	Tex.2
400.	University of the City of New York Medical Department	1841	1842	.....	1896	277	....	....	.....	N.Y.5
401.	University of the Pacific Medical Department, San Francisco	1858	1860	1865-69	1873	226	....	....	.....	Cal.1
402.	University of the South Medical Department, Sewanee, Tenn.	1892	1898	.....	1909	315	....	....	C,'07-'09	Tenn.11
403.	**University of Utah School of Medicine**, Salt Lake City*	1906	....	.....	....	.....	1909	1910	A,'07-'19	Utah 1
404.	**University of Vermont College of Medicine**, Burlington	1822	1823	1836-53	....	.....	1912	1918	A,'07-'19	Vt.2
405.	**University of Virginia Department of Medicine**, Charlottesville	1827	1828	1865	....	.....	1910	1917	A,'07-'19	Va.1
406.	**University of West Tennessee Coll. of Med. and Surg.**, Memphis	1900	1904	.....	....	.....	....	....	C,'07-'19	Tenn.14
407.	**University of Wisconsin Medical School**, Madison*	1907	....	.....	....	.....	....	1907	A,'07-'19	Wis.5
408.	University of Wooster Medical Department, Cleveland	1869	1869	.....	1896	39-421	....	....	.....	O.11,12
409.	Valparaiso University Medical Department, Valparaiso, Ind.*[48]	1907	....	.....	1918	.....	1915	....	B,'09-'18	Ill.22
410.	**Vanderbilt University Medical Department**, Nashville	1874	1875	.....	....	.....	1914	1918	A,'07-'19	Tenn.5
411.	Vermont Medical College, Woodstock	1835	....	.....	1856	58	....	....	.....	Vt.3
412.	Vermont Academy of Medicine, Castleton, Vt.	1821	....	.....	1838	34-35	....	....	.....	Vt.1
413.	**Wake Forest College School of Medicine**, Wake Forest, N. C.*	1902	....	.....	....	.....	....	1908	A,'07-'19	N.C.5
414.	Washington College Medical Department, Baltimore	1827	1828	.....	1840	416	....	....	.....	Md.2
415.	Washington Homeopathic Medical College, Washington, D. C.	1896	1896	.....	1896	259	....	....	.....	D.C.5
416.	**Washington University Medical School**, St. Louis	1891	1892	.....	....	336-335	1910	1912	A,'07-'19	Mo.2
417.	Washington University School of Medicine, Baltimore	1840	1841	1851-1867	1877	413	....	....	.....	Md.2
418.	Western College of Homeopathic Medicine, Cleveland	1849	1851	.....	1857	419-149-57	....	....	.....	Ohio 7
419.	Western Eclectic College of Med. and Surg., Kansas City, Kan.	1908	1908	.....	1909	116-117	....	....	C,'08-'09	Kan.7
420.	Western Homeopathic College, Cleveland	1857	1858	.....	1870	417-149-57	....	....	.....	Ohio 7
421.	Western Pennsylvania Medical College, Pittsburgh	1886	1887	.....	1908	393	....	....	B,'07-'08	Pa.12
422.	**Western Reserve University School of Medicine**, Cleveland	1881	1882	.....	....	39-408	....	1901	A,'07-'19	Ohio 6
423.	Westminster University College of Medicine, Denver	1907	1908	.....	1908	101-102	....	....	C,'07-'08	Colo.4
424.	**West Virginia University School of Medicine**, Morgantown*	1902	....	.....	....	.....	1911	1917	A,'07-'11; B,'12-'16; A,'17-'19	W.Va.1
425.	Willamette University Medical Department, Salem, Ore.	1865	1867	1896	1913	.....	....	....	B,'07-'08; C,'09-'13	Ore.1
426.	Willoughby University Medical Department, Willoughby, Ohio	1835	....	.....	1847	.....	....	....	.....	Ohio 28
427.	Wisconsin College of Physicians and Surgeons, Milwaukee	1893	1894	.....	1913	214	....	....	B,'07-'11; C,'12-'13	Wis.2
428.	**Wisconsin, University of, Medical School**, Madison*	1907	....	.....	....	.....	....	1907	A,'07-'19	Wis.5
429.	Woman's Hospital Medical College, Chicago	1870	1871	1872	1879	430-285	....	....	.....	Ill.9
430.	Woman's Medical College, Chicago	1879	1880	.....	1892	429-285	....	....	.....	Ill.9
431.	Woman's Medical College of Baltimore	1882	1883	1898	1910	.....	....	....	B,'07-'10	Md.5
432.	Woman's Medical College of Cincinnati	1887	1888	.....	1895	197	....	....	.....	Ohio 20
433.	Woman's Medical College, Kansas City, Mo.	1895	1896	.....	1908	.....	....	....	.....	Mo.30
434.	**Woman's Medical College of Pennsylvania**, Philadelphia	1850	1852	1862	....	.....	1914	1915	A,'07-'19	Pa.7
435.	Woman's Medical College of the New York Infirmary for Women and Children, New York City	1868	1870	.....	1899	.....	....	....	.....	N.Y.14
436.	Woman's Medical College of Northwestern University, Chicago	1892	1896	.....	1902	429-428	....	....	.....	Ill.9
437.	Worthington Medical College, Eclectic, Worthington, Ohio	1833	1833	1839-43	1845	115-113	....	....	.....	Ohio 2
438.	Yale College, Medical Institution of, New Haven, Conn.	1812	1814	.....	1879	439	....	....	.....	Conn.1
439.	**Yale University School of Medicine**, New Haven, Conn.	1879	1880	.....	....	437	....	1909	A,'07-'19	Conn.1

47. This school was organized as the College of Physicians and Surgeons but before a year had passed assumed the title, University College of Medicine.

48. Taught only the first two years of the medical course operating under the charter of the Chicago College of Medicine and Surgery.

* Offers only the first two years of the medical course.

(Continued from page 506)

Prior to 1904 the majority of colleges had sessions of twenty-eight weeks or less. For four years no colleges have had sessions shorter than twenty-nine weeks, and this year only one college reported a session as short as thirty weeks. Sessions of from thirty-three to thirty-six weeks were reported by 67, or 78.9 per cent., of all colleges.

TUITION AND OTHER FEES

Attention is called to Table 1, on pages 500-502, to the amount charged by the various medical colleges per annum for tuition, matriculation, laboratory and graduation fees for each student. In Table 11, the eighty-five colleges have been grouped according to the amount of fees charged and according to their classification by the Council on Medical Education in Classes A, B and C. Fourteen colleges charge fees of $100 or less per year; thirty-six between $100 and $175, and thirty-five charge above $175. Of the fourteen colleges charging $100 or less, eleven (75 per cent.) are listed among Class A (acceptable) colleges[2] by the Council on Medical Education; two are Class B colleges and one is rated in Class C. The eleven Class A colleges having these low fees are the schools of medicine of the state universities of Colorado, Iowa, Kansas, Michigan, Missouri, North Dakota, South Dakota, Texas, Utah, West Virginia and Wisconsin. On the other hand, five colleges listed by the Council in Class C charge fees of from $100 to $175 per year for each student, and one exacts fees of $200. Diplomas from Class C colleges are reported as not recognized by thirty-three to thirty-nine state licensing boards.[3] No intelligent student would knowingly spend his time and money in a low-grade college, the diplomas of which are not recognized by many states, when in the same time, and for even less money, he could attend one of the best-equipped colleges, the diplomas of which are recognized everywhere. Although forty-six colleges listed in Class A charge fees ranging from $150 to $275 per year for each student, the actual expense for teaching that student for the year in these colleges

2. See Classification of Medical Colleges, page 521.

3. See THE JOURNAL A. M. A., April 19, 1919, p. 1148, Table D, which shows in what state diplomas granted by various colleges are not recognized as an acceptable qualification for the license to practice.

amounts to three or several times the fee charged. In fact, accurate data secured from eighty-two medical colleges show that the average amount received each year from the individual student was $150, while the average amount actually expended in the training of that student for a year was $419. This larger expenditure is possible because the colleges receive either state aid or private endowment. This shows that no medical college can properly teach medicine on the income received from fees alone.

COLLEGES, STUDENTS AND GRADUATES BY STATES

Illinois formerly had the largest number of medical colleges (Table 12), but for the last three years the first place has been held by New York, where there are still eight colleges. Illinois, Missouri and Pennsylvania have six colleges each; Massachusetts and Ohio have five each, and California and Tennessee have four each. Of Class C colleges, however, Missouri has three, Massachusetts has two, and there is one each in Illinois and Tennessee. In Missouri the Class C colleges are not recognized by the local state licensing board and exist because that board does not have or does not exert the power to have their charters revoked.

TABLE 11.—COLLEGE FEES

Total Fees	Number of Colleges			
	Class A	Class B	Class C	Total
$ 50 or less	4	1	..	5
50 to $ 75	3	..	..	3
75 to 100	4	1	1	6
100 to 125	8	..	..	8
125 to 150	3	1	2	6
150 to 175	17	2	3	22
175 to 200	10	3	..	13
200 or above	19	2	1	22
Totals	68	10	7	85

TABLE 12.—MEDICAL COLLEGES, STUDENTS AND GRADUATES BY STATES

State	Colleges		Students		Graduates		Graduates with B.S. or A.B.
	Total	Class C	Men	Women	Men	Women	
Alabama	1	....	56	....	4	....	2
Arkansas	1	....	43	....	7	....	1
California	4	....	433	61	69	8	46
Colorado	1	....	72	3	18	1	6
Connecticut	1	....	66	3	12	....	9
Dist. of Columbia	3	....	277	5	44	1	23
Georgia	2	....	210	....	33	....	10
Illinois	6	1	1,464	94	241	6	132
Indiana	1	....	194	6	32	....	27
Iowa	1	....	226	6	44	1	22
Kansas	1	....	128	8	20	....	13
Kentucky	1	....	95	4	18	....	2
Louisiana	1	....	265	10	75	2	33
Maine	1	....	45	....	16	....	9
Maryland	2	....	544	65	128	15	101
Massachusetts	5	2	884	45	206	12	104
Michigan	3	....	494	30	92	2	50
Minnesota	1	....	270	16	54	....	44
Mississippi	1	....	46	2	....	....	....
Missouri	6	3	722	36	215	14	63
Nebraska	2	....	247	7	52	1	32
New Hampshire	1	....	34	....	....	....	....
New York	8	....	2,154	118	435	21	175
North Carolina	2	....	85	1	....	....	....
North Dakota	1	....	19	2	....	....	....
Ohio	5	....	564	17	116	5	75
Oklahoma	1	....	69	4	12	....	3
Oregon	1	....	58	8	15	....	4
Pennsylvania	6	....	1,272	92	345	13	114
South Carolina	1	....	66	....	14	....	4
South Dakota	1	....	17	2	....	....	....
Tennessee	4	1	368	2	90	....	28
Texas	2	....	314	21	68	5	16
Utah	1	....	27	1	....	....	....
Vermont	1	....	99	....	20	....	2
Virginia	2	....	231	4	45	....	17
West Virginia	1	....	36	3	....	....	....
Wisconsin	2	....	181	10	13	....	13
Totals	85	7	12,366	686	2,549	107	1,180

TABLE 13.—STUDENTS AND GRADUATES ACCORDING TO CLASSIFICATION

Year	Students						Graduates					
	Colleges Rated in Class						Colleges Rated in Class					
	A	%	B	%	C	%	A	%	B	%	C	%
1913	11,122	65.4	4,156	24.4	1,735	10.2	2,539	63.8	1,050	26.4	392	9.8
1914	12,336	74.7	2,838	17.2	1,328	8.1	2,626	73.1	686	19.1	282	7.8
1915	11,314	76.0	2,668	17.9	909	6.1	2,629	74.4	688	19.4	219	6.2
1916	11,162	79.6	2,087	14.9	773	5.5	2,630	74.7	695	19.8	193	5.5
1917	11,317	82.2	1,761	12.8	686	5.0	2,577	76.3	648	19.2	154	4.5
1918	11,522	84.5	1,488	10.9	620	4.5	2,024	75.8	399	14.9	247	9.2
1919	11,466	87.9	1,086	8.3	500	3.8	2,220	83.6	268	10.1	168	6.3

TABLE 14.—PHYSICIANS IN PROPORTION TO POPULATION

State	Physicians	Population	1 Physician to
Alabama	2,530	2,396,270	942
Arizona	333	272,094	816
Arkansas	2,587	1,792,965	693
California	5,929	3,119,412	526
Colorado	1,713	1,014,581	592
Connecticut	1,701	1,286,268	756
Delaware	264	216,941	821
District of Columbia	1,237	374,584	302
Florida	1,296	938,877	724
Georgia	3,442	2,935,617	852
Idaho	458	461,766	1,008
Illinois	11,095	6,317,734	569
Indiana	4,765	2,854,107	598
Iowa	4,004	2,224,771	555
Kansas	2,668	1,874,195	702
Kentucky	3,483	2,408,547	691
Louisiana	2,060	1,884,778	914
Maine	1,179	782,191	663
Maryland	2,268	1,384,539	610
Massachusetts	5,926	3,832,790	646
Michigan	4,598	3,133,678	681
Minnesota	2,506	2,345,287	913
Mississippi	1,975	2,001,466	1,013
Missouri	6,063	3,448,498	568
Montana	661	486,376	675
Nebraska	1,960	1,296,877	661
Nevada	159	114,742	721
New Hampshire	666	446,352	670
New Jersey	3,153	3,080,371	976
New Mexico	456	437,015	958
New York	15,877	10,646,989	670
North Carolina	2,257	2,466,025	1,092
North Dakota	604	791,437	1,310
Ohio	8,089	5,273,814	651
Oklahoma	2,672	2,377,629	889
Oregon	1,157	888,243	767
Pennsylvania	11,495	8,798,007	765
Rhode Island	752	637,415	847
South Carolina	1,433	1,660,934	1,159
South Dakota	666	735,434	1,098
Tennessee	3,481	2,321,253	666
Texas	6,246	4,601,279	736
Utah	488	453,648	929
Vermont	653	366,192	560
Virginia	2,552	2,234,030	875
Washington	1,698	1,660,578	977
West Virginia	1,759	1,439,165	818
Wisconsin	2,817	2,553,963	906
Wyoming	254	190,380	749
Totals	146,174	105,253,300	720

For the last three years New York has had the largest number of students enrolled, this year having 2,272, followed by Illinois with 1,558 and Pennsylvania with 1,364. New York leads also in the number of graduates, having reported 456, followed by Pennsylvania with 358, Illinois with 247, Missouri with 229, and Massachusetts with 218.

QUALIFICATIONS OF STUDENTS AND GRADUATES

Table 13 shows the students and graduates of the last six years grouped according to the rank of the

colleges in the classification of the Council on Medical Education. Note that during the seven years the percentage of students enrolled in Class A colleges has increased from 65.4 to 87.9 and that for the last three years also the total numbers of students in attendance at these schools has increased from 11,317 to 11,466. Note, on the other hand, both the percentages and the totals of students enrolled in Class B and Class C colleges have been reduced. The percentage of students in Class B colleges has been reduced from 24.4 to 8.3 and in Class C colleges from 10.2 to 3.8. Of graduates, also, the percentage in Class A colleges shows an increase, while in Class B and Class C colleges there has been a decrease. The reduction in the total number of students and graduates, therefore, has been largely at the expense of the lower grade colleges, while the numbers of students and graduates in the higher grade colleges are actually increasing.

COLLEGE NOTES

Colleges Closed.—Five medical schools have been closed during the year. The College of Physicians and Surgeons, San Francisco, has discontinued the teaching of medicine but will retain a nominal existence for three years so as to grant degrees to the students of the three remaining classes who are completing their medical education in other schools. The College of Homeopathic Medicine of the State University of Iowa has been abolished by the Iowa legislature and in its stead an elective chair in homeopathic materia medica and therapeutics has been established in the State University of Iowa College of Medicine. Lincoln Medical College, Eclectic, Lincoln, Neb., has been reported closed. The Fordham University School of Medicine, New York City, was closed recently by the board of trustees of Fordham University on the plea that funds for the proper maintenance of the school were lacking. Leonard Medical School, the medical department of Shaw University, an institution for colored students located at Raleigh, N. C., has been closed.

Special Items Concerning Medical Education

Arkansas.—The University of Arkansas Medical Department, Little Rock, has discontinued the teaching of the clinical years and as a consequence the Council on Medical Education has rated the institution in Class A. The lower rating heretofore held by the school was due largely to the serious conditions in clinical teaching.

California.—The trustees of the University of Southern California have voted to set aside $250,000 for the medical department to be used for new buildings and equipment.

Colorado.—The University of Colorado School of Medicine: The Phipps Loan Fund of $5,000 was established in 1918 by Mr. L. C. Phipps and Mr. L. C. Phipps, Jr. Several loans are available from it each year for the benefit of promising students of the second, third or fourth years of the school of medicine who are in need of such assistance to enable them to continue their medical education.

Connecticut.—Yale University School of Medicine has enlarged its medical library, providing more space for books and for the reading room. There are now 26,000 volumes in the library, including 14,000 bound volumes of medical journals and society transactions. There are over 250 medical periodicals, including both American and European journals. The library contains the "Index Medicus," the "Surgeon-General's Catalogue," and the "Quarterly Cumulative Index." A part of the library was donated to the medical school by the New Haven Medical Society.

——A special gift of $50,000 was received from the family of the late Anthony N. Brady, for the equipment of the Brady Laboratory.

——A fund of $80,000 to be known as the physiologic laboratory building fund, to be used ultimately for the construction of a physiologic laboratory and pending this the income to be used for the benefit of the department of physiology, has been donated by Mr. and Mrs. Howard H. Spaulding, Jr., Chicago, who gave $50,000; Mr. Benjamin H. Throop, who gave $25,000, and Mr. J. Ogden Armour, Chicago, who donated $5,000.

——In memory of Capt. Chauncey B. Keep, and to be used as an endowment for an infirmary for Yale University, a donation of $54,000 in securities was made by Mr. and Mrs. Chauncey Keep and Mrs. Katherine Keep of Chicago.

Illinois.—Plans for the resumption of the preliminary work for the new medical college and hospital buildings for the University of Chicago have again been taken up. The new medical school will be constructed on the property owned by the university on the south side of the midway, and the first building to be erected will be a hospital and dispensary to cost $1,000,000. The school for practitioners will be located near Rush Medical College, and the hospital will be known as the Albert Merritte Billings Hospital. The buildings planned will cost $17,000,000.

Indiana.—The new medical school building of Indiana University at Indianapolis will, it is announced, be completed and ready for occupancy by the opening of the school year in September. The reports that the entire medical course will be taught at Indianapolis are denied and the premedical courses will be given in Bloomington as before.

Kentucky.—The Medical Department of the University of Louisville received from one of its faculty members a gift of $5,000, payable $500 annually. The first instalment will be expended in the equipment of a research laboratory in which diagnostic problems of medical and surgical cases will be worked out.

Massachusetts.—The Medical School of Harvard University received an anonymous donation of $50,000 for the establishment of the James C. Melvin fund for tropical medicine, the income to be used for research in medicine. The medical school has also received the income on the residuary estate of Horace Fletcher, to be used to "foster knowledge of healthful nutrition." By the will of J. Ewing Mears $100,000 was received for the study of methods to reform and cure criminals and mental defectives by surgery.

Michigan.—The legislature appropriated $1,000,000 with which to start a new 800 bed hospital to be connected with the University of Michigan Medical School. It is expected that the building and equipment will cost between $2,000,000 and $3,000,000. It will be so constructed that building operations can be stopped at any story and the part that has already been completed can be used while the upper stories are being finished.

Missouri.—The Washington University School of Medicine, in addition to several smaller gifts for special investigations and similar purposes, has received a fund of $300,000, one half from the general education board and one half from a friend of the university, for the endowment of the department of pharmacology. With this fund this department also will be established on the whole time university basis from the opening of the next session. Other departments of the school which have been placed on the university basis are medicine, surgery, pediatrics, pathology and bacteriology, physiology, biological chemistry and anatomy.

Nebraska.—A new laboratory building is being completed on the campus of the University of Nebraska College of Medicine. This building will house the departments of physiology, pharmacology and biochemistry. The general animal house for all three departments as well as for experimental surgery occupies a fifth floor, and includes a large operating room for animals. The cost is approximately $150,000.

——Through the will of Clementine C. Conkling, property in the city of Omaha valued at $25,000 has been bequeathed to the University of Nebraska College of Medicine. The income from this property will probably be devoted to the support of a research fellowship in surgery. The state appropriations for the medical college and hospital maintenance and equipment for the biennium ending April, 1921, totals $380,000.

New York.—At the meeting of the trustees of Columbia University, Nov. 4, 1918, it was announced that the New York Polyclinic Hospital had offered to transfer its property to Columbia University, to be maintained and perpetuated for the public service and for advanced research in medicine and surgery. The trustees of Columbia University adopted resolutions, receiving the proposal and appointing a subcommittee to arrange the detailed terms and conditions of accepting the gift.

——Columbia University College of Physicians and Surgeons has received $9,000 from the trustees of the East River Homes Foundation, to be applied toward work in tuberculosis; $5,000 from an anonymous donor to be used in surgical research; $1,000 each, to the funds to provide for the admission of women to the medical school, William H. Moore, Arthur Curtiss James, Elizabeth Waterbury, Forrest S. Bryden, J. M. Wallace, D. G. Reid, and F. L. Hines. A donation of $1,000 was also received from Mrs. V. Everett Macy for additions to the medical school buildings.

——The Long Island College Hospital has been given a farm for keeping animals used in research, by an anonymous benefactor. Experimental work has already been begun on fowl influenza, diphtheria and chickenpox.

——The New York Post-Graduate Medical School and Hospital received $25,000 by the will of Frederick Mead.

——The University of Buffalo has set aside $100,000 and purchased property at a cost of $17,500 with the intention of erecting new laboratories for the medical department. Construction will be begun at the earliest possible date. The new City Hospital on Grider Street is now available for teaching. Another unit is to be added to this hospital, which, when completed, will provide altogether about 1,200 beds.

——The New York Homeopathic Medical College and Flower Hospital received during the last year a gift of $110,000 and also a new hospital building of 100 beds; value $150,000. Furthermore, the alumni of the college have pledged to contribute $30,000 yearly for the next five years for the maintenance of the college, in addition to the regular sums received from the students and from the trustees.

Ohio.—Two years ago a plot of land consisting of about 15 acres was purchased as a site for the new buildings of the School of Medicine of Western Reserve University; for a new Lakeside Hospital, and for a babies' and maternity hospital. It was planned to create a group of hospital and medical school buildings to make an ideal plant for the teaching of medicine. This tract is situated next to the literary departments of Western Reserve University and the Case School of Applied Science. Although the war has postponed the erection of these buildings, Lakeside Hospital lately received some contributions and bequests which will hasten the buildings. By the will of the late Col. Oliver Payne a gift of $1,000,000 came to Lakeside to be used at the discretion of the trustees. By the will of the late Mr. W. S. Tyler, Cleveland, a trustee of Lakeside, a bequest of $200,000 was provided for the erection and endowment of a maternity ward on the new site. Mr. Samuel Mather, president of Lakeside, opened the new building fund of the hospital by a gift of $350,000. There is also a fund held by the trustees of Lakeside for the benefit of the children's and maternity wards amounting to over $150,000.

——The faculty of the Western Reserve University School of Medicine voted to admit women at its session, beginning Oct. 2, 1919.

——The University of Cincinnati has established in its college of medicine a department in industrial medicine and public health. Under the plans submitted, $100,000 is to be raised by the citizens' committee on finance, for the support of this department for five years. The training which will be received in this department will make the students competent social and medical engineers and will also enable them to educate the general public as to the value of good health. The course in the new department will be started in October and will be open to graduates in medicine. A portion of the instruction will be given at the college and part at various industrial establishments along the lines now practiced in the cooperative course.

Oklahoma.—The appropriation of a $200,000 building for the hospital provided in 1917, for the University of Oklahoma School of Medicine, was supplemented by an appropriation in January, 1919, of $56,929.87 which is to complete the building and provide furnishings. The hospital will be opened by the beginning of the next session in October.

Oregon.—The first unit of the University of Oregon Medical School, consisting of a reinforced concrete structure, 200 feet by 65 feet, has been completed and occupied. Ground has been deeded the county which will provide ample space to construct an affiliated hospital on the 20 acre campus. The construction of this hospital was begun in July.

Pennsylvania.—The Hahnemann Medical College of Philadelphia has received $40,000 from Mr. Walter E. Hering to be known as "The Constantine Hering Fund"; the income of which is to be used for financially assisting deserving students to obtain their medical education. The college also received from the same donor $200,000 for research work in the fight again influenza.

——The Jefferson Medical College received $5,000 for the endowment of a free scholarship, and $10,000 by the will of Harriet Blanchard.

Tennessee.—The board of trustees of the University of Tennessee voted $100,000 to the medical school to be used for a new laboratory building to be erected in the rear of the Memphis City Hospital. The new building will have laboratories for pathology, bacteriology, chemistry and physiology.

——The General Education Board and the Carnegie Foundation for the Advancement of Teaching have each given $150,000 for the endowment of Meharry Medical College, Nashville, after the Methodist Episcopal Church had raised $200,000, which makes a total of $500,000.

Vermont.—The General Assembly of the State has provided fifty scholarships of $100 each, available to regular resident students of the University of Vermont College of Medicine whose work is satisfactory and who are in need of financial assistance.

Virginia.—The University of Virginia Department of Medicine will be closely affiliated with the tuberculosis sanatorium established at Charlottesville by the State Board of Health. The fourth year students will take part of their clinical work at this sanatorium.

——The Memorial Hospital No. 2 for colored patients and the Dooley Hospital for contagious diseases, both owned and controlled by the Medical College of Virginia, will be opened early in the fall. The buildings cost respectively $225,000 and $65,000, and were built by subscriptions of the citizens of Richmond and by Major James H. Dooley.

Washington.—A plan to build a hospital on the campus of the University of Washington, Seattle, to cost a million dollars and which is to form the nucleus for a medical department of the university, was proposed and endorsed at the meeting of the Kings County Medical Society.

Wisconsin.—The Marquette University of Milwaukee has succeeded in raising its medical school endowment fund of $1,000,000, one-third of which was donated by the Carnegie Foundation for the Advancement of Teaching. The income from this fund is to go for the salaries of teachers and maintenance and cannot be used for buildings, additional funds for which are now being sought.

General Items.—The General Education Board of the Rockefeller Foundation reports appropriations aggregating $1,108,525 during 1918-19 to various educational institutions throughout the United States. Of this sum the largest amounts were given for medical education, $400,000 being given to Johns Hopkins University Medical School for the endowment of a department of obstetrics, and $150,000 to the Meharry Medical College at Nashville, Tenn.

Canada.—The University of Toronto has received a bequest of $50,000 by the will of the late Dr. Julius Mickle, London, England, a former graduate of the university. This amount will be divided into two fellowships, one in honor of the donor's father and mother. The former will consist of the income from $25,000, to be awarded to the person who, during the preceding ten years, has done most to promote the sound practice of medicine, and this will be open to all the world. The other fellowship will be awarded to the student of the University of Toronto who passes highest in his or her third and fourth years.——An unnamed donor has given the University of Toronto $10,000 through Mrs. McCrae Kilgour, Brandon, Man., in memory of her brother, the late Col. John McCrae, who was an alumnus of the university. This will be used for two scholarships to be given in alternate years to students from Guelph Collegiate Institute; failing one, then from any other institute in Canada.——The residue of the estate of the late Dr. Richard A. Reeve, Toronto, goes to the University of Toronto, but the amount is not definitely known as yet.——The president of the University of Toronto has asked all members of the clinical medical department to place their resignations in the hands of the newly appointed professor of medicine, Dr. Duncan A. L. Graham, preparatory to reorganization of the faculty. Dr. Graham will strive to bring about the more intimate correlation of laboratory and clinical methods for diagnosis and treatment of disease.——The department of medicine of the University of Toronto is to be the recipient of a gift of $25,000 a year for a period of twenty-five years from Sir John and Lady Eaton. This is to provide for a full-time clinician in the department of medicine and a half-time clinician in pediatrics.——A recent endowment to the University of Toronto provides a sum of

between $500,000 and $750,000 for the establishment of four special chairs to be held by full-time professors. These chairs are, respectively, pediatrics, gynecology, orthopedic surgery, and a fourth to be determined.

——The Faculty of Medicine of Western University, London, Ont., is planning the erection of a new medical college building at an estimated cost of $100,000.

——Queen's University, Kingston, Ontario, reports that an additional endowment of $1,000,000 has been received for the general purposes of the university. Of this sum, the Carnegie Foundation gave $250,000 on condition that $750,000 be obtained from other sources. The medical faculty will benefit from this fund in proportion to its requirements, and it is proposed that several more full-time professors will be secured, and the departments of physiology, bacteriology and public health will be developed. A fund of $200,000 is also available to be expended in the reconstruction of the hospital.

——A tablet was recently unveiled in the New Medical Building, McGill University, to the memory of nine medical students who lost their lives in France. Dr. George E. Armstrong, acting dean of the medical faculty, delivered an address as the tablet was unveiled.——Prof. J. George Adami, McGill University, is to leave that institution to accept the vice chancellorship of Manchester University, England.

Scotland.—The University of Glasgow has received from Mr. William Guthrie Gardiner and Mr. F. C. Gardiner an endowment for three chairs in the university, these being the chairs of bacteriology, organic chemistry and physiologic chemistry. The endowment amounts to £20,000, or $100,000, for each chair, making a total of £60,000, or $300,000.

South America.—New pavilions for the study of anatomy, histology and pathologic anatomy have been erected for the school of medicine in the University of Bogota, Colombia.

Egypt.—The Gordon Memorial College, now in its seventeenth year at Khartoum, Egypt, is proposing to found a medical school as a memorial to Lord Kitchener. About $45,000 has already been collected for the purpose, mainly by subscriptions from natives in the Sudan.

GRADUATE COURSES IN PUBLIC HEALTH

Graduate courses in public health have been established in connection with eleven medical schools, the first of which was at the University of Pennsylvania in 1909, the latest is that in connection with the medical department of the Johns Hopkins University which began its course in 1918. Two institutions, the University of Colorado and Tulane University, have suspended their courses, at least for the present. Three others report no students during the past year, giving the war as a reason. Five of the schools have courses leading to the degree of Doctor of Public Health (Dr. P. H.); three after a two-year course and two after a one-year course. The University of California offers the degree of Graduate in Public Health (Gr. P. H.) after a two-year course instead of the degree of Dr. P. H. The degree of Certified Sanitarian (C. S.) after a one-year course is offered by the University of Pennsylvania to graduates of colleges of arts and sciences. The degree of Master of Public Health (M. P. H.) is offered after a one-year course by the Detroit College of Medicine and Surgery and the University of Wisconsin Medical School. The Master in Arts in Public Health [M. A. (P. H.)] is offered by the University of California Medical School, and the Master in Science in Public Health [M. S. (P. H.)] by the University of Michigan. The courses offered by the eleven medical schools are as follows:

The University of California: Courses began in 1915; number of instructors, 20; three courses leading to degree of Gr. P. H.: (a) a four year course covering three years in the college of letters and science and one year in the medical school; (b) a two year course covering one year in the college of letters and science and one year in the medical school for graduates of the college of civil engineering who have completed the work in sanitary engineering, and (c) a course of one and a half years, including one year in the college of letters and science, and a half year in the medical school for students who have completed three and a half years of the medical course. Completion of this third course gives the degrees of M.D. and Gr. P.H. The University of California also offers a one year course to graduates in arts or sciences for the degree of Master in Arts in Public Health [M.A., (P.H.)]. Fees are $150 each year. A thesis is required for the degree; students enrolled 1918-19, 15; no graduates. The course extends from August to May.

Johns Hopkins Medical School: The School of Hygiene and Public Health was opened in October, 1918. There are 34 instructors. Four courses are offered: (a) A two year course leading to the degree of Dr. P. H., requiring for admissioin a bachelor's degree and a degree in medicine. The degree of M.D. and the degree of Dr. P. H. may be obtained in a combined course of five years. A thesis is required for graduation.

(b) A three year course leading to the degree of Doctor of Science in Hygiene requiring for admission a bachelor's degree and adequate training in physics, chemistry, biology and the medical sciences, anatomy, physiology and pathology. A written and oral examination and a dissertation embodying the results of an independent investigation are required for graduation.

(c) A two year course leading to the degree of Bachelor of Science in Hygiene, the course consisting of combined work in the medical school and the School of Hygiene and Public Health. For admission the applicant must have completed at least two years of work in an approved college and have studied courses in physics, biology, inorganic and organic chemistry.

(d) A one year course leading to a certificate in public health is also offered to graduates of approved medical schools or graduates in arts or sciences who present evidence of satisfactory training in the physical and medical sciences.

The fees charged are $250 per year. Altogether 16 students were enrolled during 1918-1919; no graduates. The course extends from September 30 to June 15.

Medical School of Harvard University: The School of Public Health was opened in 1910; there are 40 instructors. A one year course is offered leading to a certificate in public health. For admission the applicant must have completed two years of work in a recognized medical school, or have received a bachelor's degree from an approved college or technical school, or have had special experience in public health work. In any instance he must show evidence of having completed satisfactory courses in physics, chemistry and biology and modern languages and the fundamental medical sciences. Although not a prerequisite, all candidates are advised to obtain a medical degree before specializing in public health work. Fees are $250 per year; 70 students were enrolled during 1918-19; one graduate. Course runs from October to June.

Detroit College of Medicine and Surgery: The course began in 1913 with ten instructors. A one year course leading to the degree of Master of Public Health (M.P.H.) is offered to graduates of approved medical schools. Fees are $130 per year. No thesis required. No students enrolled during the past session. The course runs from September to June.

The University of Michigan Medical School: The graduate courses in public health were established in the University of Michigan in 1913. The number of instructors is approximately 10. Two courses are offered,—one to graduates in arts and sciences or medicine extending from one to two years, leading to the degree of Master in Science and Public Health; the other a course of from two to three years in length for graduates in arts or sciences and medicine, leading to the degree of Doctor of Public Health. For residents of Michigan the fees consist of $10 matriculation and $49 for men students and $45 for women; for non-residents of Michigan, matriculation $25 and an annual fee of $69 for men and $65 for women. A thesis is required for the degree of Dr. P. H. There is a summer session but the regular session extends from October 1 to July 1. No students were enrolled during the last session owing to war conditions.

University and Bellevue Hospital Medical College: The graduate course in public health began in 1916 with approximately 30 teachers. Two courses are offered,—a one year course leading to the degree of Doctor of Public Health for graduates of approved medical schools, and a correspondence course of indefinite length, especially adapted for physicians who are health officers, leading to a certificate in public health. The tuition for the Dr. P. H. course is $200 per year and for the certificate course, $50. For the certificate course the last week must be spent in residence. There were 74 health officers reported as taking the correspondence course dusing the year. Four degrees of Dr. P. H. were granted during the year and 25 candidates completed the correspondence course. The courses run from October to June.

The University of Pennsylvania: The graduate courses in public health began in 1906; there are 13 instructors; two courses are offered,—a one year course for graduates in medicine, leading to the degree of Dr. P. H. and a one year course for graduates of arts or science leading to the degree of Certified Sanitarian. A thesis is required for graduation. The fees are $150 per year. There were two students during 1918; one graduate. The course extends from October to June.

The University of Wisconsin: Graduate courses in public health began in 1910. There are eight teachers. Two courses are offered,—a one year course for graduates in medicine, leading to the degree of Master of Public Health (M. P. H.); the other a two year course for physicians, leading to the degree of Doctor of Public Health. Fees are $50 per year for residents of Wisconsin and $170 for non-residents. A thesis is required for graduation. There were no students and no graduates during the last year owing to war conditions.

Uniform Requirements in 1920-21

On February 28, 1919, a conference of representatives from a number of universities in the country was held at New Haven, Conn. The object of the conference was to reach an agreement on the matters of curriculum, degrees and certificates in connection with teaching and awards in Public Hygiene. As a result of certain recommendations at this conference the following changes will probably be made to take effect with the Session 1920-21:

1. That the degree of Doctor of Public Hygiene (for which the abbreviation shall be Dr. P. H.) for graduates in medicine shall be awarded after two years of work done under academic direction, of which one year at least shall be in residence, and that the requirements for the degree shall include class work, practical field work, and an essay based on individual study of a particular problem.

2. That the degree Doctor of Philosophy or Doctor of Science in Public Hygiene shall be conferred on students who hold the bachelor's degree from a college or technical school of recognized standing, and have satisfactorily completed not less than three years of graduate study. It is understood that this degree is based on a knowledge of physics, chemistry, biology, anatomy, physiology, physiological chemistry, pathology and bacteriology.

3. That the Certificate in Public Hygiene shall be granted for not less than one academic year of work to those who have satisfactorily completed two years of work in a recognized medical school or who have received a bachelor's degree from a recognized college or technical school, provided they have pursued satisfactory courses in physics, chemistry, biology and general bacteriology.

4. That the degree of Bachelor of Science in Public Hygiene shall be given for the completion of a four years' course, the last two years of which shall be devoted to the fundamental sciences associated with hygiene.

5. That the fee for the course shall be advanced to $250 for the course leading to a degree or certificate and to $35 for instruction in any single branch of the course.

GRADUATE MEDICAL SCHOOLS

There are now eighteen graduate medical schools in the United States. These are commonly referred to as post-graduate medical schools. Of these institutions, seven are connected with universities in which the graduate teaching is, or will be, as thoroughly and scientifically given as are the courses of the undergraduate medical school. The universities having graduate schools are the Universities of Alabama, California, Tulane, Harvard, Minnesota, Columbia and Pennsylvania.

The University of Chicago has received a generous endowment preparatory to the establishing of a large graduate school. Active steps toward this end have been delayed by the war.

Several of the undergraduate medical schools give graduate courses to a greater or less extent. Following is the complete list of the graduate medical schools:

ALABAMA

GRADUATE SCHOOL OF MEDICINE OF THE UNIVERSITY OF ALABAMA, Ave. F and 20th St., Birmingham. Organized 1915. Formerly the Birmingham Medical College. The dean is Dr. Lewis C. Morris, Empire Bldg.

CALIFORNIA

SAN FRANCISCO POLYCLINIC AND POST-GRADUATE SCHOOL, 1535 Jackson St., San Francisco. The dean is Dr. H. D'Arcy Power.

GRADUATE SCHOOL OF MEDICINE OF THE UNIVERSITY OF CALIFORNIA, Buena Vista and Alpine Sts., Los Angeles. Organized 1914. Formerly the University of Southern California College of Medicine. The dean is Dr. George H. Kress.

ILLINOIS

CHICAGO POLICLINIC, 219-221 W. Chicago Ave., Chicago. The secretary is Dr. Malcolm L. Harris, 32 N. State St.

ILLINOIS POST-GRADUATE MEDICAL SCHOOL, 1844 W. Harrison St., Chicago. The secretary is Dr. James A. Clark.

POST-GRADUATE MEDICAL SCHOOL, 2400 Dearborn St., Chicago. The secretary is Dr. Emil Ries, 77 E. Washington St.

CHICAGO EYE, EAR, NOSE AND THROAT COLLEGE, 235 W. Washington St., Chicago. The secretary is Dr. John R. Hoffman, 31 N. State St.

PROVIDENT HOSPITAL POST-GRADUATE SCHOOL, 16 West 36th St., Chicago. For colored physicians. The dean is Dr. George C. Hall.

LOUISIANA

NEW ORLEANS POLYCLINIC. Post-Graduate School of Medicine of the Tulane University of Louisiana, Tulane Ave. and Liberty St., New Orleans. The dean is Dr. Chas. L. Chassaignac.

NEW ORLEANS POST-GRADUATE SCHOOL OF MEDICINE, 135 South Rampart St., New Orleans. The secretary is Dr. Joseph A. Danna.

MASSACHUSETTS

HARVARD GRADUATE SCHOOL OF MEDICINE, 240 Longwood Ave., Boston. Organized 1912. Instructors in charge of the various departments of the medical school. Teaching as thorough and scientific as in the undergraduate school. Instruction throughout the year. The dean is Dr. Alexander S. Begg.

MINNESOTA

UNIVERSITY OF MINNESOTA GRADUATE SCHOOL OF MEDICINE, Minneapolis. Organized 1914. In 1915, the resources and facilities of the Mayo Foundation were added, with the staff, clinics, laboratories, library and records at Rochester, Minn. Instruction throughout the year. The dean is Guy Stanton Ford, Ph.D., Minneapolis.

NEW YORK

NEW YORK POST-GRADUATE MEDICAL SCHOOL, 2d Ave. and 20th St., New York City. The secretary is Dr. J. Bentley Squier.

NEW YORK POLYCLINIC MEDICAL SCHOOL, 341-51 W. 50th St., New York City. Is to be taken over and the work developed by Columbia University. The president is Dr. John A. Wyeth, 341 W. 50th St.

MANHATTAN EYE, EAR AND THROAT HOSPITAL AND MEDICAL SCHOOL, 210 E. 64th St., New York City. The secretary is Dr. Samuel J. Kopetzky.

SCHOOL OF OPHTHALMOLOGY AND OTOLOGY, 13th St. and 2d Ave., New York City. The secretary is Dr. Geo. S. Rixon, 40 E. 41st St.

COLLEGE OF THE NEW YORK OPHTHALMIC HOSPITAL, 23d St. and Third Ave., New York City. The secretary is Dr. W. C. McKnight, 13 Central Park West.

PENNSYLVANIA

GRADUATE SCHOOL OF MEDICINE OF THE UNIVERSITY OF PENNSYLVANIA, Philadelphia. Organized 1916 by taking over the Medico-Chirurgical College of Philadelphia. The Philadelphia Polyclinic was merged in 1918. The dean is Dr. George H. Meeker.

STANDARDS OF THE COUNCIL ON MEDICAL EDUCATION OF THE AMERICAN MEDICAL ASSOCIATION

SCHEDULE FOR THE GRADING OF MEDICAL SCHOOLS

Schools are rated on a civil service basis on a scale of 1,000 points. The data relating to each school are grouped under ten general heads in such a manner that the groups have as nearly equal weight as possible, each group allowing a possible 100 points (10 per cent.) out of a possible 1,000 points (100 per cent.). The revised schedule showing the general heads under which the data are arranged is as follows:

1. Character of curriculum, grading of course, sequence of subjects, supervision, administration, etc.
2. Medical school buildings; adaptability, light, heat, ventilation, cleanliness, etc.
3. Laboratory facilities and instruction.
4. Dispensary facilities and instruction.
5. Hospital facilities and instruction in medicine, surgery, obstetrics, and gynecology.
6. Hospital facilties for instruction in medical specialties and provision for clinical clerkships, necropsies, etc.
7. Full-time instructors and assistants with special reference to their special qualifications and evidences of their work, including research.
8. Faculty, number, qualifications and organization of, including the staff of teaching hospitals.
9. Library, museum, charts and special apparatus and evidences of the use made of them.
10. Showing of graduates at state board and other examinations and other evidences by which the training received is indicated.

It will be noted that financial income is not referred to in the ten heads outlined. It is quite evident, however, that no college can secure an adequate number of expert full-time teachers, provide well equipped laboratories, library and museum, and be conducted in accordance with present-day medical knowledge without a liberal income in addition to students' fees.

MEANING OF CLASSES A, B, AND C

Class A Colleges will, as heretofore, be those which are acceptable; Class B, those which, under their present organization, give promise of being made acceptable by general improvements, and Class C those

(*a*) Which require a complete reorganization to make them acceptable.

(*b*) Which do not keep satisfactory records of their students in regard to entrance requirements, attendance, grades in courses, division into classes and reasons for promotion.

(*c*) Which do not enforce their requirements in regard to admission (including those admitted to advanced standing), promotion and graduation.

(*d*) Which give the major portion of their instruction after 4 o'clock in the afternoon.

(*e*) Which are privately owned and conducted for profit.

(*f*) Which for other specific reasons are not eligible for inclusion in Class B.

ESSENTIALS OF AN ACCEPTABLE MEDICAL COLLEGE

(Revised to June 15, 1919)

The following outline of the essentials of an acceptable medical college was issued by the Council an Medical Education of the American Medical Association for its suggestive value in the rapid development in progress in the medical colleges of the United States. It also represents the standard by which medical colleges are measured in the Council's classifications.

REQUIREMENTS FOR ADMISSION

1. The minimum requirement for admission to an acceptable medical college is a four-year high school education or its full equivalent and two years of work in a college of arts and sciences approved by the Council, as follows:

I. High School Requirements

(*a*) For admission to the two-year premedical college course, students shall have completed a four-year course of at least fourteen units (fifteen after Jan. 1, 1920) in a standard accredited high school or other institution of standard sec-

ondary school grade, or have the equivalent as demonstrated by examinations conducted by the College Entrance Examination Board, or by the authorized examiner of a standard college or university which has been approved by the Council on Medical Education. Unless all the entrance units are obtained by examination, a detailed statement of attendance at the secondary school, and a transcript of the student's work, should be kept on file by the college authorities. This evidence of actual attendance at the secondary schools should be obtained, no matter whether the student is admitted to the freshman or to higher classes.

(*b*) Credits for admission to the premedical college course may be granted for the subjects shown in the following list and for any other subject counted by a standard accredited high school as a part of the requirements for its diploma, provided that at least eleven units must be offered in Groups I-V:

SCHEDULE OF SUBJECTS REQUIRED OR ACCEPTED FOR ENTRANCE TO THE PREMEDICAL COLLEGE COURSE

Subjects	Units*	Required
GROUP I, ENGLISH—		
Literature and composition	3-4	3
GROUP II, FOREIGN LANGUAGES—		
Latin	1-4	2†
Greek	1-3	
French or German	1-4	
Other foreign languages	1-4	
GROUP III, MATHEMATICS—		
Elementary algebra	1	1
Advanced algebra	½-1	..
Plane geometry	1	1
Solid geometry	½	..
Trigonometry	½	..
GROUP IV, HISTORY—		
Ancient history	½-1	1
Medieval and modern history	½-1	
English history	½-1	
American history	½-1	
Civil government	½ 1	
GROUP V, SCIENCE—		
Botany	½-1	..
Zoology	½-1	..
Chemistry	1	..
Physics	1	..
Physiography	½-1	..
Physiology	½-1	..
Astronomy	½	..
Geology	½-1	..
GROUP VI, MISCELLANEOUS—		
Agriculture	1-2	..
Bookkeeping	½-1	..
Business law	½	..
Commercial geography	½-1	..
Domestic science	1-2	..
Drawing, freehand and mechanical	½-2	..
Economics and economic history	½-1	..
Manual training	1-2	..
Music: Appreciation or harmony	1-2	..

* A unit is the credit value of at least thirty-six weeks' work of four or five recitation periods per week, each recitation period to be not less than forty minutes. In other words, a unit represents a year's study in any subject in a secondary school, constituting approximately a quarter of a full year's work. A satisfactory year's work in any subject cannot be accomplished under ordinary circumstances in less than 120 sixty-minute hours, or their equivalent.

† Both of the required units of foreign language must be of the same language, but the two units may be presented in any one of the languages specified.

Of the fourteen units of high school work (fifteen after Jan. 1, 1920), eight units are required, as indicated in the foregoing schedule; the balance may be made up from any of the other subjects in the schedule.

II. Premedical College Course

(*c*) Beginning Jan. 1, 1918, the minimum requirement for admission to acceptable medical schools, in addition to the high school work specified above, will be sixty semester hours of collegiate work in a college approved[1] by the Council on Medical Education. The subjects included in the two years of college work should be in accordance with the following schedule:

SCHEDULE OF SUBJECTS OF THE TWO-YEAR PREMEDICAL COLLEGE COURSE

Sixty Semester Hours* Required	Semester Hours
Required Subjects:	
Chemistry (a)	12
Physics (b)	8
Biology (c)	8
English composition and literature (d)	6
Other nonscience subjects (e)	12
Subjects Strongly Urged:	
A modern foreign language (f)	6-12
Advanced botany or advanced zoology	3-6
Psychology	3-6
Advanced mathematics, including algebra and trigonometry	3-6
Additional courses in chemistry	3-6
Other Suggested Electives:	
English (additional), economics, history, sociology, political science, logic, mathematics, Latin, Greek, drawing.	

* A semester hour is the credit value of sixteen weeks' work consisting of one lecture or recitation period per week, each period to be not less than fifty minutes net, at least two hours of laboratory work to be considered as the equivalent of one lecture or recitation period.

1. A tentative list of approved colleges may be received on application.

SUGGESTIONS REGARDING INDIVIDUAL SUBJECTS

(*a*) *Chemistry.*—Twelve semester hours required (eight until Jan. 1, 1920), of which at least eight semester hours must be in general inorganic chemistry, including four semester hours of laboratory work. In the interpretation of this rule work in qualitative analysis may be counted as general inorganic chemistry. The remaining four semester hours (required after Jan. 1, 1920) may consist of additional work in general chemistry or of work in analytic or organic chemistry. After Jan. 1, 1922, organic chemistry will be required.

(*b*) *Physics.*—Eight semester hours required, of which at least two must be laboratory work. It is urged that this course be preceded by a course in trigonometry. This requirement may be satisfied by six semester hours of college physics, of which two must be laboratory work, if preceded by a year (one unit) of high school physics with laboratory work.

(*c*) *Biology.*—Eight semester hours required, of which four must consist of laboratory work. The requirement may be satisfied by a course of eight semester hours in either general biology or zoology, or by courses of four semester hours each in zoology and botany, but not by botany alone. This requirement may also be satisfied by six semester hours of college biology, including three semester hours of laboratory work, if preceded by a year (one unit) of high school biology or zoology with laboratory work.

(*d*) *English Composition and Literature.*—The usual introductory college course of six semester hours, or its equivalent, is required.

(*e*) *Nonscience Subjects.*—Of the sixty semester hours required as the measurement of two years of college work, at least eighteen, including the six semester hours of English, should be in subjects other than the physical, chemical or biologic sciences.

(*f*) *Foreign Language.*—A reading knowledge of a modern foreign language is strongly urged. French and German have the closest bearing on modern medical literature. If the reading knowledge in one of these languages is obtained on the basis of high school work, the student is urged to take the other language in his college course. It is not considered advisable, however, to spend more than twelve of the required sixty semester hours on foreign languages.

III. Approved Colleges of Arts and Sciences

A tentative list of colleges of arts and sciences approved by the Council on Medical Education has been prepared, and revisions of this list will be published from time to time. By an approved college (of arts and sciences) is meant one whose standing has been vouched for by some standardizing agency in whose methods the Council has confidence. To be recognized a college must have sufficient scientific equipment and maintain laboratories in the premedical sciences. It must have ample endowment to maintain a sufficient corps of teachers. Membership in some national organization or association of colleges will be favorably regarded by the Council and, in the absence of such membership, careful investigation will be made of the causes of exclusion. It must also maintain national standards for admission to its freshman class. Students must be required to complete a four-year high school course, and the requirements for admission to the premedical course must be no less than the requirements for admission to the regular B. S. course of the college.

Particular attention will be given to the character of high schools from which certificates are received. Colleges should recognize only certificates from high schools approved by commissions or boards of associations of colleges and secondary schools or other agencies approved by the Council. When such endorsement is lacking the college should be slow in accepting certificates without the support of entrance

examinations. Undue liberality in the acceptance of certificates from secondary schools unendorsed by approved standardizing agencies will be registered by the Council as a failure to comply with its requirements and the college will be dropped from the approved list.

PREMEDICAL COURSES IN MEDICAL COLLEGES—JUNIOR COLLEGES

1. Premedical college courses given in or by medical schools, or advance years taken in high schools, will not be considered as acceptable unless they have been investigated and approved by some association of colleges and secondary schools or other approved agency having to do with the standardizing of liberal arts colleges.

ADMINISTRATION OF ENTRANCE REQUIREMENTS

2. The admission of students to the medical school must be in the hands of a responsible committee or examiner whose records shall always be open for inspection.[3] Documentary evidence of the students' preliminary education should be obtained and kept on file. When the medical school is an integral part of a university, this work usually devolves on the university examiner. Unless the university examiner and his records are closely accessible, however, some officer at the medical school should obtain and keep on file documentary evidence of each student's preliminary education, including both high school and collegiate work. It is particularly important that the records show that the required amount of work in the premedical sciences, including laboratory exercises, has been completed.

OTHER MEDICAL SCHOOL REQUIREMENTS

3. The college should require that students be in actual attendance in the college *within the first week* of each annual session and thereafter.

4. Actual attendance at classes should be insisted on except for good cause, such as for sickness, and no credit should be given for any course where the attendance has been less than 80 per cent. of the full time.

5. (*a*) Full advanced standing may be granted to students only for work done in other acceptable medical schools, and in granting advanced standing there should be no discrimination against the college's full-course students. Official verification of the student's previous medical work should be obtained by direct correspondence with the college previously attended, and his preliminary qualifications should also be verified and recorded the same as for freshman students. (*b*) In *exceptional cases* students from Class B medical schools may be given advanced standing but not higher than *entrance* to the third year (junior) class, and no credit should be given in any subject except on recommendation of the head of the department teaching that subject. (*c*) in *exceptional cases* students from Class C colleges may be given advanced standing but not higher than *entrance* to the second year (sophomore) class, and then only after thorough examinations in all first year subjects have been passed.

SUPERVISION, EQUIPMENT, TEACHERS

6. There should be careful and intelligent supervision of the entire school by the dean or other executive officer who holds, and has sufficient authority to carry out, fair ideals of medical education as determined by the present day knowledge of medicine.

7. There should be a good system of records[2] showing conveniently and in detail the credentials, attendance, grades and accounts of the students, by means of which an exact knowledge can be obtained regarding each student's work. Records should also be kept showing readily the attendance of patients at the teaching hospitals and dispensaries; the maternity cases attended by students, and the postmortem cases used in teaching.

8. The college curriculum should be fully graded and should cover four sessions of at least thirty-two weeks each, exclusive of time required for matriculation and holidays, and at least thirty hours per week of actual work. The courses offered in the various subjects should be set forth by departments (anatomy, physiology, etc.) in the annual announcement, showing for each course its number, subject content, character (lecture, recitation, laboratory or clinic), length of time, when, where, and by whom given, and the amount of credit allowed. The courses for each class should also be clearly set forth in a printed class schedule, for the guidance of the students.

(*a*) The college should give two years of work consisting largely of laboratory work in well equipped laboratories of anatomy, histology, embryology, physiology, chemistry (inorganic, organic and physiologic), bacteriology, pathology, pharmacology, therapeutics and clinical diagnosis. Present-day medical knowledge makes it essential that these subjects be in charge of full-time, well-trained teachers.

(*b*) Two years of clinical work, largely in hospitals and dispensaries, with courses in medicine (including physical diagnosis, pediatrics, nervous and mental diseases), surgery (including surgical anatomy and operative surgery on the cadaver), obstetrics, gynecology, laryngology, rhinology, ophthalmology, otology, dermatology, hygiene and medical jurisprudence. With the higher entrance requirements time is now available in the latter part of the second year for beginning courses in physical diagnosis and the principles of surgery.

(*c*) As soon as conditions warrant, relations should be established with a number of approved hospitals so that a fifth undergraduate year may be required to be spent by the student as an intern under the continued supervision of the medical school.

FACULTY

9. (*a*) The college should provide at least *eight expert thoroughly trained professors in the laboratory branches*, salaried so that they may devote their entire time to instruction and to that research without which they cannot well keep up with the rapid progress being made in their subjects.[4] There should also be a sufficient number of assistants in each department to look after the less important details. For colleges having *sixty students or less* in each class, there should be *at least one full-time salaried assistant each in the departments* of (1) anatomy, (2) physiology, (3) pathology and bacteriology, and (4) physiologic chemistry and pharmacology, and *one additional assistant in each of these departments should be provided for each additional thirty students enrolled.* This represents a low average of the full-time assistants already employed by the acceptable medical colleges.

(*b*) The faculty should be made up of graduates of institutions recognized as medical colleges and who have had a training in all departments of medicine. Nonmedical men should be selected as teachers in medical schools only under exceptional circumstances and only when medical men of equal special capacity are not available. The faculty should be organized, each department having its head professor, its associate professor, assistant professor, instructor, etc., each having his particular subjects for the teaching of which he is responsible to the head of the department.

CLINICAL FACILITIES

10. (*a*) The college should own or entirely control a hospital, in order that students may come into close and extended contact with patients under the supervision of the attending staff. This hospital should be in close proximity to the college and have a daily average (for senior classes of 100 students *or less*) of not less than 200 patients who can be utilized for clinical teaching, these patients to be of such character as to permit the students to see and study the common variety of surgical and medical cases as well as a fair number in each of the so-called specialties. In the use of this material *bedside and ward clinics* should be developed for sections of from five to ten students, and for the seniors, a certain number of patients in medicine, surgery and the specialities should be assigned to each student. A well supervised clinical clerk system should also be installed. The treatment and care of these patients should be particularly observed and recorded by the student under the strict supervision of the intern, or the attending staff of the hospital.[4]

(*b*) The college should also have ample hospital facilities for children's diseases, contagious diseases and nervous and mental diseases.

(*c*) The college should own or control a dispensary, or outpatient department, the attendance to be a daily average of 100 patients (visits) (for senior classes of 100 students *or less*), the patients to be carefully classified, good histories and records of the patients to be kept and the material to

2. See "Meaning of Classes A, B and C," paragraph (*c*), on page 517.

3. These professors should have a definite responsibility in the conduct of the college, and their first and chief interest should be the training of medical students. It is suggested that four of these professors be placed at the head of the departments of (*a*) anatomy, (*b*) physiology and physiologic chemistry, (*c*) pathology and bacteriology, and (*d*) pharmacology and therapeutics. The other four may be assigned, one each, to (*e*) histology and embryology, under the department of anatomy, and to the departments of pathology and bacteriology, physiology and pharmacology, and to the departments of internal medicine and surgery.

4. Suggestions more in detail may be found in the "Report of the Committee on the Reorganization of Clinical Teaching."—THE JOURNAL A. M. A., March 6, 1915. Reprint sent on application.

be well used. The attending staff should be made up of good teachers, should be well organized and be regular in attendance.

(*d*) At least six maternity cases should be provided for each senior student, who should have actual charge of these cases under the supervision of the attending physician. Careful records of each case should be handed in by the student.

(*e*) Facilities should be provided for at least thirty necropsies (for senior classes of 100 students *or less*) during each college session which are attended and participated in by senior students.

OTHER TEACHING FACILITIES AND FINANCES

11. The college should have a working medical library, to include the more modern text and reference books with the *Index Medicus* and thirty or more leading medical periodicals, the current numbers of which should be in racks or on tables easily accessible to the students; the library room should be properly lighted and heated, and open during all or the greater part of the day; it should be equipped with suitable indexes as well as with tables and chairs, and have a competent librarian in charge.

12. There should be a working medical museum having its various anatomic, embryologic, pathologic and other specimens carefully prepared, labeled and indexed so that any specimen may be easily found and employed for teaching purposes. It is suggested that so far as possible with each pathologic specimen coming from postmortems there also be kept the record of the postmortem, the clinical history of the patient on whom the necropsy was held and microscopic slides showing the minute structures of the disease shown in the gross specimen. The museum furnishes an excellent means of correlating the work of the department of pathology with that of the clinical departments.

13. There should be sufficient dissecting material to enable each student individually to dissect at least the lateral half of the human cadaver, to provide cross-sections and other demonstration material and to allow of a thorough course for each senior in operative surgery on the cadaver.

14. For modern experimental laboratory work in physiology, pharmacology and bacteriology as well as for medical research, a supply of animals—frogs, turtles, rabbits and guinea-pigs, if not also cats and dogs—is essential. Proper provision, also, is necessary for the housing and care of such animals. In any use made of animals every precaution should be taken to prevent needless suffering, and work by students should be carefully supervised.

15. Each college should have a supply of such useful auxiliary apparatus as a stereopticon, a reflectoscope, carefully prepared charts, embrologic or other models, manikins, dummies for use in bandaging, a roentgen-ray and other apparatus now so generally used in medical teaching.

16. The college should show evidences of thorough organization and of reasonably modern methods in all departments, and evidences that the equipment and facilities are *being intelligently used* in the training of medical students.

17. A clear statement of the college's requirements for admission, tuition, time of attendance on the classes, sessions, courses offered and graduation should be clearly set forth, together with complete classified lists of its matriculants and latest graduating class in regular annual catalogues or announcements.

18. Statistics show[5] that modern medicine cannot be acceptably taught by a medical school depending solely on the income from students' fees. No medical school should expect to secure admission to, or be retained in Class A, therefore, which does not have an annual income of at least $25,000 in addition to the amount obtained from students' fees.

NOTE.—Correspondence from medical colleges regarding the above requirements is invited, and further suggestions or information available will be gladly furnished.

Entrance Requirements of Medical Colleges

Seventy-eight medical schools are now requiring, as a minimum for entrance, *two years* or more of work in a college of liberal arts in addition to a four-year high-school education. The years, respectively, when for each college the one-year and the two-year requirements became effective, and the rating of each college, are as follows:

College	One Year	Two Years	College Rating
ALABAMA			
University of Alabama School of Medicine	1914	1915	A
ARKANSAS			
University of Arkansas Medical Department	1915	1918	A
CALIFORNIA			
College of Medical Evangelists	1914	1915	B
University of Southern California Med. Dept.	1914	1916	B
Leland Stanford Junior University School of Med.	....	1909	A
University of California Medical School	....	1905	A
COLORADO			
University of Colorado School of Medicine	....	1910	A
CONNECTICUT			
Yale University School of Medicine	....	1909	A
DISTRICT OF COLUMBIA			
Georgetown University School of Medicine	....	1912	A
George Washington University Medical School	1914	1918	A
Howard University School of Medicine	1910	1914	A
GEORGIA			
Emory University School of Medicine, Atlanta	1914	1918	A
University of Georgia Medical Department	1914	1918	A
ILLINOIS			
Loyola University School of Medicine	1915	1918	B
Hahnemann Medical College and Hospital	1914	1916	B
Northwestern University Medical School	1908	1911	A
Rush Medical College (University of Chicago)	....	1904	A
University of Illinois College of Medicine	1913	1914	A
INDIANA			
Indiana University School of Medicine	1909	1910	A
IOWA			
State University of Iowa College of Medicine	1909	1910	A
KANSAS			
University of Kansas School of Medicine	....	1909	A
KENTUCKY			
University of Louisville Medical Department	1914	1918	A
LOUISIANA			
Tulane University of Louisiana School of Medicine	1910	1918	A
MAINE			
Bowdoin Medical School	1912	1916	A
MARYLAND			
Johns Hopkins University Medical Department	....	1893	A
University of Maryland School of Medicine and College of Physicians and Surgeons	1914	1918	A
MASSACHUSETTS			
Boston University School of Medicine	1914	1916	A
Medical School of Harvard University	....	1900	A
Tufts College Medical School	1914	1918	A
MICHIGAN			
Detroit College of Medicine and Surgery	1914	1918	A
University of Michigan Medical School	....	1909	A
University of Michigan Homeopathic Medical School	1912	1916	A
MINNESOTA			
University of Minnesota Medical School	....	1907	A
MISSISSIPPI			
University of Mississippi School of Medicine	1914	1918	A
MISSOURI			
St. Louis University School of Medicine	1910	1918	A
University of Missouri School of Medicine	1906	1910	A
Washington University Medical School	1910	1912	A
NEBRASKA			
John A. Creighton Medical College	1914	1918	A
University of Nebraska College of Medicine	1908	1909	A
NEW HAMPSHIRE			
Dartmouth Medical School	....	1910	A
NEW YORK			
Albany Medical College	1914	1918	A
Columbia University College of Phys. and Surg.	....	1910	A
Cornell University Medical College	....	1908	A
Long Island College Hospital	1914	1918	A
New York Homeo. Med. Coll. and Flower Hospital	1915	1919	B
Syracuse University College of Medicine	1909	1910	A
University and Bellevue Hospital Medical College	1912	1918	A
University of Buffalo Department of Medicine	1914	1918	A
NORTH CAROLINA			
Wake Forest College School of Medicine	....	1908	A
University of North Carolina School of Medicine	1910	1917	A
NORTH DAKOTA			
University of North Dakota School of Medicine	....	1907	A
OHIO			
Eclectic Medical College	1915	1918	B
Ohio State University College of Medicine	1914	1915	A
Ohio State Univ. Coll. of Homeopathic Medicine	1915	1916	B
University of Cincinnati College of Medicine	1910	1913	A
Western Reserve University School of Medicine	....	1901	A
OKLAHOMA			
University of Oklahoma School of Medicine	1914	1917	B
OREGON			
University of Oregon Department of Medicine	1910	1915	A
PENNSYLVANIA			
Hahnemann Medical College and Hospital	1914	1917	A
Jefferson Medical College	1914	1917	A

5. See "Medical College Finances," The Journal A. M. A., April 8, 1916, p. 1115.

College	One Year	Two Years	College Rating
Temple University Department of Medicine	1914	1918	B
University of Pennsylvania School of Medicine	1909	1910	A
University of Pittsburgh School of Medicine	1911	1913	A
Woman's Medical College of Pennsylvania	1914	1915	A
SOUTH CAROLINA			
Medical College of the State of South Carolina	1914	1916	A
SOUTH DAKOTA			
University of South Dakota College of Medicine	1908	1909	A
TENNESSEE			
Meharry Medical College	1914	1918	B
Vanderbilt University Medical Department	1914	1918	A
University of Tennessee College of Medicine	1914	1918	A
TEXAS			
Baylor University College of Medicine	1913	1918	A
University of Texas Department of Medicine	1910	1917	A
UTAH			
University of Utah School of Medicine	1909	1910	A
VERMONT			
University of Vermont College of Medicine	1912	1918	A
VIRGINIA			
Medical College of Virginia	1914	1915	A
University of Virginia Department of Medicine	1910	1917	A
WEST VIRGINIA			
West Virginia University School of Medicine	1911	1917	A
WISCONSIN			
Marquette University School of Medicine	1913	1915	A
University of Wisconsin Medical School	....	1907	A

Total, 78.

The seven following medical colleges[6] either have not announced the higher entrance requirements or evidence has not been received to show they are in effect for all students enrolled:

	Rating
Chicago Hospital College of Medicine	C
College of Physicians and Surgeons, Boston	C
Middlesex College of Medicine and Surgery, Cambridge, Mass.	C
Kansas City College of Medicine and Surgery[7]	C
Kansas City University of Physicians and Surgeons	C[8]
St. Louis College of Physicians and Surgeons	C
University of West Tenn. Coll. of Med. and Surg., Memphis	C

Scholarships in Medical Schools

As evidence that provision is being made for worthy students, regardless of their financial status, 334 scholarships are reported this year in the following thirty-eight medical schools:

University of Alabama School of Medicine, Mobile	67
Leland Stanford Junior University Medical School*	3
University of California Medical School,* San Francisco	3
University of Colorado School of Medicine,* Boulder	1
Yale University School of Medicine, New Haven, Conn.*	2
Hahnemann Medical College and Hospital of Chicago*	6
Loyola University School of Medicine, Chicago	3
Rush Medical College, Chicago	7
University of Illinois College of Medicine, Chicago*	7
Indiana University School of Medicine, Indianapolis	12
State University of Iowa College of Medicine	1
University of Kansas School of Medicine*	17
Johns Hopkins University Medical Department, Baltimore	6
University of Maryland School of Medicine,* Baltimore	6
Harvard Medical School,* Boston	30
Boston University School of Medicine*	50
Detroit College of Medicine and Surgery	8
Washington University Medical School, St. Louis	4
Dartmouth Medical School,* Hanover, N. H.	2
University of Buffalo Department of Medicine*	1
University of Cincinnati College of Medicine*	12
Western Reserve University School of Medicine, Cleveland	1
University of Oregon Department of Medicine,* Portland	3
Hahnemann Medical College and Hospital of Philadelphia*	12
Jefferson Medical College of Philadelphia	1
Temple University Department of Medicine, Philadelphia	3
University of Pennsylvania School of Medicine,* Philadelphia	3
Woman's Medical College of Pennsylvania,* Philadelphia	15
Medical College of the State of South Carolina, Charleston	8
University of Tennessee College of Medicine, Memphis	6
Vanderbilt University Medical Department, Nashville, Tenn.	4
Baylor University College of Medicine, Dallas, Tex.	5
University of Texas Department of Medicine,* Galveston	1
University of Wisconsin Medical School*	6
University of Vermont College of Medicine*	1
Medical College of Virginia, Richmond	15
University of Virginia Department of Medicine, Charlottesville*	2
Total in 37 medical schools	334

*Have loan funds also.

6. For the standing of these and other medical colleges before state licensing boards, see Table D, THE JOURNAL A. M. A., April 19, 1919, p. 1148.

7. This college is an offshoot of the Eclectic Medical University; it has refused to have an inspection made. It is reported not recognized by the Missouri State Board of Health and by the licensing boards of 32 other states.

8. This college was formerly the Central College of Osteopathy; in 1916 it assumed the title Central College Medical Department, and took its present name in 1918.

Loan Funds

Besides the twenty-one colleges marked by an asterisk (*) in the above list which have loan funds for deserving but needy students, such funds are available also at the five following medical schools:

College of Medical Evangelists, Loma Linda, Calif.
Tulane University of Louisiana School of Medicine, New Orleans, La.
University of Missouri School of Medicine, Columbia, Mo.
University of Nebraska College of Medicine, Omaha, Neb.
Wake Forest College School of Medicine, Wake Forest, N. C.
University of North Dakota, School of Medicine, University, N. D.

Hospital Intern Year

Eight medical colleges have adopted the requirement of a fifth year to be spent by the student as an intern in an approved hospital or in other acceptable clinical work before the M.D. degree will be granted. These colleges and the years when the requirement became effective for matriculants and graduates are as follows:

	Affects Matriculants	Affects Graduates
University of Minnesota Medical School	1910-11	1915
Leland Stanford Junior Univ. School of Med.	1914-15	1919
Rush Medical College (University of Chicago)	1914-15	1919
University of California Medical School	1914-15	1919
Northwestern University Medical School	1915-16	1920
University of Vermont College of Medicine	1915-16	1920
Coll. of Phys. and Surgs., Los Angeles	1918-19	1923
Columbia Univ. Coll. of Phys. & Surgs., New York	1918-19	1923

The hospital intern year has been adopted as an essential qualification for the license to practice in nine states, becoming effective in different years, as follows:

State Board of	Affects Student Matriculants	Affects All Applicants
Pennsylvania	1909-10	1914
New Jersey	1911-12	1916
Alaska	1912-13	1917
Rhode Island	1913-14	1917
North Dakota	1913-14	1918
Washington	1914-15	1919
Illinois	1917-18	1922
Michigan	1917-18	1922
Iowa	1918-19	1923

CLASSIFICATION OF MEDICAL COLLEGES

Revised to June 15, 1919

CLASS A—ACCEPTABLE MEDICAL COLLEGES

ALABAMA
University of Alabama School of Medicine.....Mobile

ARKANSAS
University of Arkansas Medical Department*....Little Rock

CALIFORNIA
Leland Stanford Junior Univ. School of Med..San Francisco
University of California Medical School.....San Francisco

COLORADO
University of Colorado School of Med.....Boulder-Denver

CONNECTICUT
Yale University School of Medicine.....New Haven

DISTRICT OF COLUMBIA
Georgetown University School of Medicine.....Washington
George Washington University Medical School..Washington
Howard University School of Medicine[1].....Washington

GEORGIA
Emory University School of Medicine[2].....Atlanta
University of Georgia Medical Department[3].....Augusta

ILLINOIS
Northwestern University Medical School.....Chicago
Rush Medical College (University of Chicago).....Chicago
University of Illinois College of Medicine.....Chicago

INDIANA
Indiana Univ. School of Med.....Bloomington-Indianapolis

IOWA
State University of Iowa College of Medicine....Iowa City

KANSAS
University of Kansas School of Med....Lawrence-Rosedale

* Since 1919, gives only the first two years of the medical course. Raised to Class A, June 9, 1919.

1. Rating raised to Class A June 6, 1910.

2. Rating raised to Class A Feb. 24, 1914; formerly the Atlanta Medical College.

3. Class A rating restored Feb. 24, 1913.

KENTUCKY

University of Louisville Medical Department[4].....Louisville

LOUISIANA

Tulane Univ. of Louisiana School of Med.....New Orleans

MAINE

Bowdoin Medical School.....Brunswick-Portland

MARYLAND

Johns Hopkins University Medical Department....Baltimore
University of Maryland School of Medicine and the College of Physicians and Surgeons.....Baltimore

MASSACHUSETTS

Boston University School of Medicine.....Boston
Medical School of Harvard University.....Boston
Tufts College Medical School.....Boston

MICHIGAN

Detroit College of Medicine and Surgery[5].....Detroit
University of Michigan Medical School.....Ann Arbor
University of Mich. Homeopathic Med. School....Ann Arbor

MINNESOTA

University of Minnesota Medical School.....Minneapolis

MISSISSIPPI

University of Mississippi School of Medicine*.....Oxford

MISSOURI

St. Louis University School of Medicine.....St. Louis
University of Missouri School of Medicine*.....Columbia
Washington University Medical School.....St. Louis

NEBRASKA

John A. Crighton Medical College[6].....Omaha
University of Nebraska College of Medicine.....Omaha

NEW HAMPSHIRE

Dartmouth Medical School*.....Hanover

NEW YORK

Albany Medical College.....Albany
Columbia Univ. Coll. of Phys. and Surgs....New York City
Cornell University Medical College.....New York City
Fordham University School of Medicine[7]....New York City
Long Island College Hospital[8].....Brooklyn
Syracuse University College of Medicine.....Syracuse
University and Bellevue Hospital Med. Coll..New York City
University of Buffalo Department of Medicine.....Buffalo

NORTH CAROLINA

University of North Carolina School of Med.*...Chapel Hill
Wake Forest College School of Medicine*.....Wake Forest

NORTH DAKOTA

University of North Dakota School of Medicine*..University

OHIO

Ohio State University College of Medicine.....Columbus
University of Cincinnati College of Medicine.....Cincinnati
Western Reserve Unversity School of Medicine....Cleveland

OREGON

University of Oregon Medical School.....Portland

PENNSYLVANIA

Hahnemann Medical College and Hospital.....Philadelphia
Jefferson Medical College of Philadelphia.....Philadelphia
University of Pennsylvania School of Med.....Philadelphia
University of Pittsburgh School of Medicine[9].....Pittsburgh
Woman's Medical College of Pennsylvania.....Philadelphia

SOUTH CAROLINA

Medical College of the State of South Carolina[10]..Charleston

SOUTH DAKOTA

University of South Dakota College of Medicine*..Vermilion

TENNESSEE

University of Tennessee College of Medicine[11].....Memphis
Vanderbilt University Medical Department.....Nashville

* Gives only the first two years of the medical course.
4. Rating raised to Class A June 6, 1910.
5. Class A rating restored June 21, 1914.
6. Class A rating restored Feb. 4, 1917.
7. Class A rating restored Feb. 24, 1914. College closed in 1919.
8. Class A rating restored June 21, 1914.
9. Rating raised to Class A June 6, 1910.
10. Class A rating restored Feb. 6, 1916.
11. Rating raised to Class A June 21, 1914.

TEXAS

Baylor University College of Medicine[12].....Dallas
University of Texas Department of Medicine.....Galveston

UTAH

University of Utah School of Medicine*.....Salt Lake City

VERMONT

University of Vermont College of Medicine.....Burlington

VIRGINIA

Medical College of Virginia.....Richmond
University of Virginia Department of Med...Charlottesville

WEST VIRGINIA

West Virginia Univ. School of Medicine*[13].....Morgantown

WISCONSIN

Marquette University School of Medicine[14].....Milwaukee
University of Wisconsin Medical School*.....Madison

Total, 69.

CLASS B—COLLEGES NEEDING GENERAL IMPROVEMENTS TO BE MADE ACCEPTABLE

CALIFORNIA

College of Medical Evangelists[15]...Loma Linda-Los Angeles
University of Southern California Medical Department (College of Physicians and Surgeons).....Los Angeles

ILLINOIS

Loyola University School of Medicine[16].....Chicago
Hahnemann Medical College and Hospital[17].....Chicago

NEW YORK

New York Homeopathic Medical College and Flower Hospital[18] .....New York City

OHIO

Eclectic Medical College.....Cincinnati
Ohio State Univ. Coll. of Homeopathic Med.[19].....Columbus

OKLAHOMA

Univ. of Oklahoma School of Med.[20]..Norman-Oklahoma City

PENNSYLVANIA

Temple University Department of Medicine[21]....Philadelphia

TENNESSEE

Meharry Medical College[22].....Nashville

Total, 10.

CLASS C—COLLEGES REQUIRING A COMPLETE REORGANIZATION TO MAKE THEM ACCEPTABLE

CALIFORNIA

College of Physicians and Surgeons†.....San Francisco
Oakland College of Medicine and Surgery[23]†.....Oakland

ILLINOIS

Chicago Hospital College of Medicine.....Chicago

MASSACHUSSETTS

College of Physicians and Surgeons.....Boston
Middlesex College of Medicine and Surgery[24].....Cambridge

* Gives only the first two years of the medical course.
† College suspended in 1918.
12. Rating raised to Class A June 12, 1916.
13. Class A rating restored Feb. 4, 1917.
14. Rating raised to Class A Feb. 15, 1915.
15. Rating raised to Class B Feb. 3, 1918.
16. The Chicago College of Medicine and Surgery was merged with the Bennett Medical College, School of Medicine of Loyola University, in September, 1917. The words "Chicago College of Medicine and Surgery" were retained in the title until 1919.
17. Rating dropped to Class B June 3, 1912.
18. Rating dropped to Class B Feb. 15, 1915.
19. Rating raised to Class B Feb. 4, 1917.
20. Rating dropped to Class B June 3, 1912.
21. Rating raised to Class B June 6, 1910.
22. Rating dropped to Class B Feb. 24, 1914.
23. Rated in Class B June 6, 1910; rating dropped to Class C Feb. 3, 1918.
24. This is the medical department of the so-called "University of Massachusetts." It was rated in Class C Feb. 4, 1918.

MISSOURI

Kansas City University of Phys. and Surgs.[25]....Kansas City
Eclectic Medical University[26]†.....Kansas City
St. Louis College of Physicians and Surgeons[27].....St. Louis

NEBRASKA

Lincoln Medical College[28].....Lincoln

TENNESSEE

University of West Tenn. Coll. of Med. and Surg..Memphis

Total, 10.

CLASSIFICATION OF CANADIAN MEDICAL COLLEGES

CLASS A

University of Toronto Faculty of Medicine....Toronto, Ont.
McGill University Faculty of Medicine.....Montreal, Que.

CLASS B

Univ. of Manitoba, Manitoba Med. College..Winnipeg, Man.
Dalhousie University Faculty of Medicine....Halifax, N. S.
Queen's University Faculty of Medicine[29].....Kingston, Ont.
Western University Faculty of Medicine[30].....London, Ont.
Montreal School of Medicine and Surgery....Montreal, Que.
Laval University Faculty of Medicine.....Quebec, Que.

The University of Alberta at Edmonton, besides the premedical year, gives only the first two years of the medical course as measured by that of the medical schools of the United States. It has not been inspected.

DESCRIPTION OF MEDICAL COLLEGES

Below are given brief descriptions of the medical colleges in the United States and Canada that are legally chartered to teach medicine, several of which do not grant degrees. The name, address, year of organization, history and date when first class graduated are given in each instance. Unless otherwise stated, a class graduated each subsequent year. Where official reports have been received from the college, information regarding faculty, entrance requirements, length of term, fees, students (excluding specials and postgraduates), graduates, name of dean and next session is given without discrimination, regardless as to whether the college is sectarian or not. In a few instances in which such reports were not received, the information published is from other reliable sources. Figures for graduates include all who graduated since July 1, 1918. Extracts of rules and the membership of the Association of American Medical Colleges are shown following the list of colleges. Figures showing population of cities and states are taken from the United States Census Bureau's estimate for 1916. Statements have been added showing the preliminary requirements held by state licensing boards where those requirements include one or two years of collegiate work. Nine states, Alaska (Ter.), Illinois, Iowa, Michigan, New Jersey, North Dakota, Pennsylvania, Rhode Island and Washington, require a year's hospital internship before a license will be granted.

ALABAMA

Alabama, population 2,348,273, has one medical college, the School of Medicine of the University of Alabama, located in Mobile, a city with a population of 58,221.

In order to secure licenses to practice medicine in Alabama, students matriculating in the session of 1915-16 and thereafter must have completed two years of work in an approved college of liberal arts, including courses in physics, chemistry, biology and a modern language, prior to entering on the study of medicine. This applies to all graduates of 1919 and thereafter.

Mobile

UNIVERSITY OF ALABAMA SCHOOL OF MEDICINE, 550 St. Anthony Street.—Organized in 1859 as the Medical College of Alabama. Classes were graduated in 1861 and in all subsequent years except 1862 to 1868 inclusive. It was reorganized as the Medical Department of the University of Alabama in 1897. All property was transferred to the University of Alabama in 1907 when the present title was assumed. Two years of college work are required for admission. The faculty consists of 20 professors and 25 lecturers and assistants, a total of 45. The course of study covers four years of thirty-two weeks each. The total fees for each of the four years, respectively, are $165, $160, $160 and $185. The Dean is Dr. T. H. Frazer. The total registration for 1918-1919 was 56; graduates, 4. The fifty-fourth session begins Oct. 3, 1919, and ends June 4, 1920.

ARKANSAS

Arkansas, population 1,753,033, has one medical college, the Medical Department of the University of Arkansas, located in Little Rock, a city of 57,343. Hereafter it offers only the courses of the first two years of the medical course.

To secure licenses to practice medicine in Arkansas, students matriculating in the session of 1918-19 and thereafter must have completed two years of collegiate work, including college courses in physics, chemistry, biology and a modern language before beginning the study of medicine. This applies to all graduates of 1922 and thereafter.

Little Rock

UNIVERSITY OF ARKANSAS MEDICAL DEPARTMENT, Markham and Center Streets.—Organized in 1879 as the Medical Department of Arkansas Industrial University. It assumed the present title in 1899. In 1911 the College of Physicians and Surgeons united with it and the new school was made an integral part of the University of Arkansas. The first class was graduated in 1880. The faculty consists of 20 professors and 36 lecturers and assistants, total 56. Entrance requirements are two years of collegiate work beyond a four-year high school course. The course of study covers two years of thirty-two weeks each. The fees are $50 each year. The Dean is Dr. Morgan Smith. Total registration 1918-1919 was 43; graduates, 7. The forty-first session begins Sept. 22, 1919, and ends June 9, 1920.

CALIFORNIA

California, population 2,983,843, has four medical colleges. Two are located in San Francisco, a city of 463,516 inhabitants. They are Leland Stanford Junior University School of Medicine and the College of Medicine of the University of California. The College of Physicians and Surgeons, Medical Department of the University of Southern California is situated in Los Angeles, population 503,812. The College of Medical Evangelists is located at Loma Linda and Los Angeles.

To secure licenses to practice medicine in California under the "physician's and surgeon's" certificate, students matriculating in medical colleges in and after the session of 1915-16, prior to such matriculation, must have completed at least one year of recognized collegiate work including college courses in physics, chemistry, biology and a modern language. This applies to all graduates of 1919 and thereafter.

Berkeley-San Francisco

UNIVERSITY OF CALIFORNIA MEDICAL SCHOOL, University Campus, Berkeley; Second and Parnassus Avenues, San Francisco.—Organized in 1863 as the Toland Medical College. The first class graduated in 1864. In 1872 it became the Medical Department of the University of California. In 1909 the College of Medicine of the University of Southern California, at Los Angeles, by legislative enactment, became a clinical department. This Los Angeles portion was changed to a graduate school in 1914. In 1915 the Hahnemann Medical College of the Pacific was merged, and elective chairs in homeopathic materia medica and therapeutics were provided for. Two years of collegiate work are required for admission. The work of the first year and a half is given at Berkeley and the work of the last two and a half years at San Francisco. The faculty is composed of 12 professors and 128 associates and assistants, a total of 140. The course covers five years of nine months each, the fifth year to consist of an internship or of special work in a department of the medical school. Fees for the four years, respectively, are $200, $155, $150 and $150. The Dean is Dr. Herbert C. Moffit, San Francisco. Total registration for 1918-1919 was 188; graduates, 22. The forty-seventh session begins Aug. 19, 1919, and ends May 12, 1920.

25. Formerly the Central College of Osteopathy; in 1917 under an amended charter took the name of Central College Medical Department; assumed present title in 1918. Rated in Class C March 15, 1918.

26. An offshoot of this institution—the Kansas City College of Medicine and Surgery—was organized in 1915. It is reported not recognized by the Missouri State Board of Health. Since it is an offshoot of a Class C institution reported not recognized by the Missouri State Board of Health, no higher rating could be granted it pending an inspection which it has refused.

27. Rating dropped to Class C July 1, 1909. In 1915 it merged with the Medical Department of the National University of Arts and Sciences, but in 1917 was reestablished. In 1918 reported not recognized by the Missouri State Board of Health.

28. Formerly known as the Cotner University Medical College. Reported suspended in 1918.

29. Rating dropped to Class C Feb. 6, 1916; restored to Class B Feb. 3, 1918.

30. Rating raised to Class B Feb. 4, 1917.

Loma Linda-Los Angeles

College of Medical Evangelists.—Organized in 1909. The faculty numbers 87. The first class graduated in 1914. The laboratory departments are at Loma Linda; the clinical departments at Los Angeles. The course extends over four years of nine months each. Two years of college work are required for admission. The total fees for the four years, respectively, are $181, $181, $176, and $186. The Dean is Dr. P. T. Magan. The total registration for 1918-1919 was 84; graduates, 5. The eleventh session begins Sept. 7, 1919, and ends June 3, 1920.

Los Angeles

College of Physicians and Surgeons, Medical Department of the University of Southern California, 516 East Washington Street.—Organized in 1903, first class graduated in 1905; became Medical Department, University of Southern California, Aug. 11, 1909. The course covers four years of nine months each. Two years of collegiate work are required for admission. The faculty consists of 22 professors and 77 associate professors, lecturers and instructors, a total of 99. The fees for the four years, respectively, are $222, $217, $202 and $227. The Dean is Dr. Charles W. Bryson. The registration for 1918-1919 was 81; graduates, 28. The next session begins Sept. 2, 1919, and ends June 17, 1920.

San Francisco-Palo Alto

Leland Stanford Junior University School of Medicine, University Campus, Palo Alto, and Sacramento and Webster Streets, San Francisco.—Organized in 1908 when, by an agreement, the interests of Cooper Medical College were taken over. The first class was graduated in 1913. The faculty consists of 43 professors and 52 lecturers, assistants, etc., a total of 95. Three years of collegiate work are required for admission. The school has the quarter system and the completion of any three quarters constitutes a college year. The course covers five years of nine months each, including a year of practical or intern work. The total fees for each of the first four years is $159. The Dean is Dr. W. Ophüls, San Francisco. The total registration for 1918-1919 was 109; graduates, 16. The tenth session begins Oct. 1, 1919, and ends June 16, 1920.

COLORADO

Colorado, with a population of 975,190, has one medical college, the University of Colorado School of Medicine. The first two years of the course are given at Boulder, the seat of the university, while the last two, or clinical years, are given in Denver, which has a population of 260,800.

The Colorado State Board of Medical Examiners will register without further examination graduates of medical colleges in good standing who present licenses issued after examination by any other licensing board. The law permits any one, graduate or nongraduate, to try the board's written examination. No graduate of 1914 or thereafter is eligible to obtain a license in Colorado, or indorsement of his credentials, unless he graduated from a medical college which, at the time he matriculated, required at least two years' study, without conditions, in an accredited college of liberal arts, and this work must have included courses in physics, chemistry, biology and one modern language.

Boulder-Denver

University of Colorado School of Medicine.—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine was merged Jan. 1, 1911. The faculty embraces 12 professors, 18 associate and assistant professors, and 31 lecturers, instructors and assistants, a total of 61. The work embraces a graded course of four years of nine months each. The entrance requirements are two years of college work counting toward a degree in arts in an accredited college or university. The tuition is $90 per year for residents of Colorado, $120 for nonresidents. Laboratory fees are $10 for each of the first two years. The Dean is Dr. Charles N. Meader. The total registration for 1918-1919 was 75; graduates, 19. The thirty-eighth session begins Sept. 29, 1919, and ends June 11, 1920.

CONNECTICUT

Connecticut, with a population of 1,254,926, has one medical college, Yale University, School of Medicine, located in New Haven, population 149,685.

Candidates for license to practice medicine in Connecticut who graduate in 1914 or thereafter are not eligible unless, prior to entering on the study of medicine, they had completed, in addition to an accredited four-year high school education, at least nine months of collegiate work including college courses in physics, chemistry and general biology.

New Haven

Yale University School of Medicine, 150 York Street and Congress Avenue and Cedar Street.—Chartered in 1810 as the Medical Institution of Yale College. Organized in 1812; instruction began in 1813; first class graduated in 1814. A new charter in 1879 changed the name to the Medical Department of Yale College. In 1884, the Connecticut Medical Society surrendered such authority as had been granted by the first charter. In 1887, Yale College became Yale University. The faculty consists of 23 professors and 68 lecturers and assistants, a total of 91. The requirements for admission are two years of collegiate work plus evidence of satisfactory completion of courses in general physics, general inorganic chemistry, general biology, organic chemistry and physical chemistry or laboratory physics, all reasonably equivalent to the courses in these subjects in Yale University. The student also must have a reading knowledge of German. The course covers four years of nine months each. The fees for the four years, respectively, are approximately $205, $200, $200 and $210. The Dean is Dr. George Blumer. The total registration for 1918-1919 was 69; graduates, 12. The one hundred and seventh session begins Sept. 5, 1919, and ends June 23, 1920.

DISTRICT OF COLUMBIA

The District of Columbia, population 366,631, has three medical colleges; George Washington University Medical School, Georgetown University, School of Medicine and Howard University, School of Medicine.

Washington

George Washington University Medical School, 1335 H Street, N.-W.—Organized in 1825 as the Medical Department of Columbian College. Also authorized to use the name National Medical College. Classes were graduated in 1826 and in all subsequent years, except 1834 to 1838, and 1861 to 1863, inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it absorbed the National University Medical Department. In 1904, by an act of Congress, the title of George Washington University was granted to the institution. The faculty is composed of 38 professors and 55 instructors, demonstrators and assistants, a total of 93. Two years of collegiate work are required for admission. The course covers four years of thirty-two weeks each. The total fees are $175 each year. The Dean is Dr. William C. Borden. The total registration for 1918-1919 was 101; graduates, 16. The ninety-eighth session begins Sept. 24, 1919, and ends June 2, 1920.

Georgetown University School of Medicine, 920 H Street, N.-W.—Organized in 1851. The first class graduated in 1852. The faculty contains 25 professors, 67 instructors and assistants; total, 92. Two years of collegiate work are required for entrance. The course of study covers four terms of eight and one-half months each. The fees for the first year are $190, and for each of the other three years, $175. The Dean is Dr. George M. Kober. The registration for 1918-1919 was 73; graduates, 8. The sixty-ninth session begins Sept. 26, 1919, and ends June 11, 1920.

Howard University School of Medicine, Fifth and W Streets, N.-W.—Chartered in 1867. Organized in 1869. The first class graduated in 1871. Colored students compose a majority of those in attendance. The faculty comprises 16 professors and 24 lecturers and assistants, 40 in all. The admission requirements are two years of collegiate work, including physics, chemistry, botany and zoology, English and two years of French or German. The course covers four years of thirty-two weeks each. The fees of each of the four sessions, respectively, are $165, $155, $155 and $162. The Dean is Dr. Edward A. Balloch. Registration for 1918-1919 was 108; graduates, 21. The fifty-second session begins Oct. 1, 1919, and ends June 11, 1920.

GEORGIA

Georgia, population 2,875,953, has two medical colleges, University of Georgia, Medical Department, located in Augusta, population 50,245, and the Emory University School of Medicine in Atlanta, a city of 190,558.

In order to secure a license to practice medicine in Georgia, students matriculating in the session of 1918-19 and thereafter must have completed two years of work in an approved college of liberal arts and sciences, including courses in physics, chemistry and biology, prior to entering on the study of medicine. This applies to all graduates of 1922 and thereafter.

Atlanta

Emory University School of Medicine, 94 N. Butler Street.—Organized in 1854. Classes graduated 1855 to 1861, when it suspended. Reorganized in 1865. A class graduated in 1865 and each subsequent year except 1874. In 1898 it merged with the Southern Medical College (organized in 1878), taking the name of Atlanta College of Physicians and Surgeons. In 1913 it merged with the Atlanta School of Medicine (organized in 1905), reassuming the name of Atlanta Medical College. Became the Medical Department of Emory University in 1915; assumed present title in 1917. Two years of collegiate work are required for entrance. The faculty numbers 106. The course of study is four years of thirty-two weeks each. The fees for each of the four years, respectively, are $172, $160, $155 and $180. The Dean is Dr. W. S. Elkin. Total registration for 1918-1919 was 147; graduates, 25. The next session begins Sept. 30, 1919, and ends June 8, 1920.

Augusta

University of Georgia, Medical Department, University Place.—Organized in 1828 as the Medical Academy of Georgia, the name being

changed to the Medical College of Georgia in 1829. Since 1873 it has been known as the Medical Department of the University of Georgia. Entire property transferred to the university in 1911. Classes were graduated in 1833 and in all subsequent years except 1862 and 1863. The faculty includes 19 professors and 30 assistants, 48 in all. Two years of collegiate work are required for entrance. The course is four years of thirty-four weeks each. Fees are $5 for matriculation and $60 each year for residents of Georgia and $150 each year for nonresidents. The Dean is Dr. W. H. Doughty, Jr. The total registration for 1918-1919 was 63; graduates, 8. The eighty-eighth session begins Sept. 12, 1919, and ends May 29, 1920.

ILLINOIS

Illinois, population 6,193,626, has six medical colleges, two of which give instruction at night, all located in Chicago, a city of 2,497,722 inhabitants, and are as follows: Rush Medical College, Northwestern University Medical School, University of Illinois College of Medicine, Hahnemann Medical College and Hospital, Loyola University School of Medicine and the Chicago Hospital College of Medicine.

To be eligible for license to practice medicine in Illinois, students matriculating in the sessions of 1915-16 and of 1918-19, in addition to an accredited four-year high school education, must have completed, respectively, one year and two years of collegiate work including courses in physics, chemistry, biology and a modern language, to be taken either in a preliminary year given by a recognized medical college, or in an approved college of liberal arts. Graduates of 1923 and thereafter must have completed also a year's internship in a hospital.

Chicago

RUSH MEDICAL COLLEGE.—This school was founded in 1837, organized in 1843, was the medical department of Lake Forest University from 1887 until 1898, when it became affiliated with the University of Chicago. The first class graduated in 1844. The faculty is composed of 112 professors, 197 associates, instructors, etc., a total of 309. The requirements for admission are two years of college work, including courses in college chemistry, physics and biology, and a reading knowledge of German or French. Classes are limited to 100 students in each of the freshman and sophomore classes, and to 120 students in each of the clinical years. No application for admission is accepted after September 1. The school operates under the "quarter system" in which the year is divided into four quarters of twelve weeks each; the completion of the work of three of these quarters gives credit for a college year. The course covers four years of eight and a half months each, and a fifth year, consisting of a hospital internship or of a fellowship in one of the departments. All freshman and sophomore studies are given at the University of Chicago. The clinical years are given in the building at the corner of Wood and Harrison streets. The tuition fees for each of the first four years, respectively, are $195, $190, $180 and $195. A matriculation fee of $5 is paid but once, and there are incidentals amounting to from $5 to $7 annually. The Deans are Dr. Frank Billings and Dr. John M. Dodson. Total registration 1918-1919 633; graduates, 76. One hundred and twenty-five other students completed the work of the fourth year but will not receive their degrees till the hospital internship has been completed. The seventy-sixth session begins Oct. 1, 1919, and ends June 19, 1920.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, 2421 South Dearborn Street.—Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869, but retained the name of Chicago Medical College until 1891, when the present name was taken. Became an integral part of Northwestern University in 1905. The faculty comprises 62 professors and 94 lecturers and assistants, a total of 156. The requirements for admission are such as will admit to the College of Liberal Arts of Northwestern University, plus two years of college work, including courses in physics, chemistry, biology and a modern language. The course covers four years of eight months each. The fees for the four years, respectively, are $205, $200, $195 and $210. The Dean is Dr. Arthur I. Kendall. The total registration for 1918-1919 was 294; graduates, 19. The sixtieth session begins Oct. 7, 1919, and ends June 13, 1920.

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE, Honore and Congress Streets.—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897 and an integral part in 1910. The relationship with the university was canceled in June, 1912, but restored in March, 1913, when the present title was assumed. Two years of collegiate work are required for admission. The year is divided into three divisions of four months each, the completion of the work of any two divisions counting as a college year. The faculty is composed of 42 professors, 73 assistants and instructors, a total of 115. The total fees for the four years, respectively, are $165, $160, $150 and $165. The Dean is Dr. Albert C. Eycleshymer. The total registration for 1918-1919 was 264; graduates, 48. The thirty-eighth session begins Oct. 1, 1919, and ends June 9, 1920.

LOYOLA UNIVERSITY SCHOOL OF MEDICINE, 706 S. Lincoln St., Chicago.—Organized in 1868 as the Bennett College of Eclectic Medicine and Surgery. Eclecticism dropped and title of Bennett Medical College assumed in 1909. First class graduated in 1870, and a class graduated each subsequent year. Absorbed the Illinois Medical College in 1910 and the Reliance Medical College in 1911. In 1910 it became by affiliation the School of Medicine of Loyola University; the university assumed full control in 1915. Took over by purchase the Chicago College of Medicine and Surgery in 1917. Two years of college work are required for admission. The faculty is composed of 72 professors, 62 assistants and instructors, a total of 134. The total fees for the four years are, respectively, $166, $166, $166 and $211. The Dean is Dr. Lawrence Ryan. The total enrolment for 1918-1919 was 271; graduates, 72. The next session begins Oct. 1, 1919, and ends June 12, 1920.

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL OF CHICAGO, 2811 Cottage Grove Avenue.—Organized in 1859. The first class was graduated in 1861. Absorbed the Chicago Homeopathic Medical College in 1904. The faculty includes 59 professors and 27 lecturers, assistants, etc., a total of 86. Two years of collegiate work are required for admission. The course extends over four years of eight months each. The tuition fees for the four years, respectively, are $176, $161.50, $176.50 and $191.50. The Dean is Dr. Joseph P. Cobb. The total registration for 1918-1919 was 42; graduates, 20. The sixtieth session begins Sept. 29, 1919, and ends June 10, 1920.

CHICAGO HOSPITAL COLLEGE OF MEDICINE, an afternoon and night school, located at 3832 Rhodes Avenue.—Organized in 1911; chartered in 1912. In December, 1917, the classes of the Jenner Medical College were transferred to it. Total registration for 1918-1919 was 54; graduates, about 12. *Official reports indicate that the diplomas from this college are not recognized by the licensing boards of thirty-seven states.*

INDIANA

Indiana, population 2,826,154, has one medical college, the Indiana University School of Medicine, located at Indianapolis, a city of 271,708 people, except that the work of the first year is offered also at Bloomington, the seat of the University.

Candidates for license to practice medicine in Indiana who matriculated between Jan. 11, 1910, and Jan. 1, 1911, must have completed one year of collegiate work, in addition to an accredited four-year high school course, prior to beginning the study of medicine. Those matriculating subsequent to Jan. 1, 1911, must have completed two years of work in a recognized college of liberal arts.

Bloomington and Indianapolis

INDIANA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1903, but did not give all of the work of the first two years of the medical course until 1905. In 1907, by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878), the Central College of Physicians and Surgeons (organized in 1879), and the Fort Wayne College of Medicine (organized in 1879), merged into it. The first class was graduated in 1908. The faculty consists of 71 professors and 85 lecturers, associates and assistants, a total of 156. Two years of collegiate work are required for admission. The work of the first year is emphasized only at Bloomington. The work of the other three years is all at Indianapolis. The fees for the four years, respectively, are $100, $100, $130 and $130. A fifth optional intern year leading to the "M.D. cum laude" has been added. The Secretary at Bloomington is Dr. B. D. Myers; the Dean is Dr. Charles P. Emerson, Indianapolis. The total registration for 1918-1919 was 200; graduates, 32. The next session begins Sept. 15, 1919, and ends June 9, 1920.

IOWA

Iowa, population 2,224,771, has one medical college, the College of Medicine of the State University of Iowa, located in Iowa City, population 12,033.

Candidates for license to practice medicine in Iowa who graduated subsequent to Jan. 1, 1915, must have completed two years of work in an approved college of liberal arts prior to beginning the study of medicine, this preliminary college work to have included courses in physics, chemistry, biology and a foreign language.

Iowa City

STATE UNIVERSITY OF IOWA COLLEGE OF MEDICINE, University Campus.—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. The faculty is made up of 25 professors, 16 lecturers, demonstrators and assistants, a total of 41. Two years of collegiate work, including courses in physics, chemistry, biology and French or German, are required for admission. The course of study covers four years of thirty-six weeks each. The tuition fee for residents of Iowa is $85 per year and for nonresidents $100, plus a matriculation fee of $10 and a graduation fee of $10. The Dean is Dr. Lee Wallace Dean, Iowa City. Total registration for 1918-1919 was 228; graduates, 44. The fiftieth session begins Sept. 29, 1919, and ends June 11, 1920.

KANSAS

Kansas, population 1,840,707, has one medical college. The School of Medicine of the University of Kansas gives its first two years in Lawrence, population 12,915, and the last two

years in Rosedale, a suburb of the two Kansas Cities, which together have a population of 397,284.

Candidates for license to practice medicine in Kansas who matriculated in the session of 1910-11 and thereafter must present credentials showing that they matriculated in and graduated from a medical college which required for admission at least one year of collegiate work including college courses in physics, chemistry and biology in addition to an accredited four-year high school course. This applies to graduates of 1914 and thereafter. Students matriculating in 1918-19 (graduates of 1922) and thereafter will be required to have completed two years of premedical college work.

Lawrence and Rosedale

University of Kansas School of Medicine.—Organized in 1880. It offered only the first two years of the medical course until in 1905, when it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894, and the Medico-Chirurgical College, founded in 1897. First class graduated in 1906. The clinical courses are given at Rosedale. Absorbed Kansas Medical College in 1913. The faculty, including lecturers and clinical assistants, numbers 70. The requirements for admission are two years of collegiate work. The course covers four years of nine months each. The total fees are, $100 for each year. The Dean is Dr. S. J. Crumbine; Associate Dean, Dr. M. T. Sudler. The total registration for 1918-1919 was 136; graduates, 20. The fortieth session begins Sept. 15, 1919, and ends June 9, 1920.

KENTUCKY

Kentucky, population 2,386,866, has one medical college, the University of Louisville Medical Department, situated in Louisville, a city of 238,910 inhabitants.

To be eligible for license to practice medicine in Kentucky, all students matriculating in and after the session of 1914-15 and 1918-19, in addition to an accredited four-year high school course, must have completed, respectively, one year and two years of college work, including college courses in physics, chemistry, biology and a modern language prior to beginning the study of medicine.

Louisville

University of Louisville Medical Department, First and Chestnut Streets.—Organized in 1837 as the Louisville Medical Institute. The first class graduated in 1838, and a class graduated in each subsequent year except in 1863. In 1846 the present name was assumed. In 1907 it absorbed the Kentucky University Medical Department. In 1908 it absorbed the Louisville Medical College, the Hospital College of Medicine and the Kentucky School of Medicine. One year of collegiate work is required for admission. It has a faculty of 29 professors and 80 lecturers and assistants, a total of 109. The course covers four years of thirty-two weeks each. The fees for each of the four years, respectively, are $175, $176, $179.25 and $182.35. The Dean is Dr. Henry Enos Tuley. The total registration for 1918-1919 was 99; graduates, 18. The next session begins Sept. 23, 1919, and ends June 5, 1920.

LOUISIANA

Louisiana, having a population of 1,843,042, contains one medical college, the School of Medicine of the Tulane University of Louisiana, situated in New Orleans, a city of 371,747.

Candidates for license to practice medicine in Louisiana who graduate in 1919 and 1922 must present evidence that they have successfully completed, at an approved college or university, respectively, one year and two years of college work including biology, physics, chemistry and a modern language, before entering on the study of medicine. These requirements apply to all students who matriculated, respectively, in 1915 and 1918.

New Orleans

Tulane University of Louisiana School of Medicine, University Campus and 1551 Canal Street.—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1835 and in all subsequent years except 1863-65, inclusive. It was transferred to the Medical Department of the University of Louisiana in 1847 and became the Medical Department of the Tulane University of Louisiana in 1884. Present name in 1913, when it became the School of Medicine of the College of Medicine of the Tulane University of Louisiana. The faculty has 53 professors and 86 assistant professors, instructors, demonstrators, etc., a total of 139. The course covers four years of thirty-two weeks each. Two years of collegiate work are required for admission. Total fees for each of the four years, respectively, are $200, $200, $205 and $235. The Dean is Dr. Isadore Dyer. The total registration for 1918-1919 was 275; graduates, 73. The eighty-fifth session begins Sept. 22, 1919, and ends June 9, 1920.

MAINE

Maine, population 774,914, has one medical college, the Bowdoin Medical School, located in Brunswick and Portland, the latter having a population of 68,867.

To secure a license to practice in Maine, students matriculating in and after the session of 1915-16 must have completed one year of work in an approved college of arts and sciences before entering on the study of medicine. This applies to graduates of 1919 and thereafter.

Brunswick-Portland

Bowdoin Medical School. The Medical Department of Bowdoin College. The first two years are given at Bowdoin College, Brunswick, the last two at Portland, building located on Chadwick Street.—Organized in 1820 as the Medical School of Maine. The first class graduated in 1821. Present title assumed in 1915. The faculty numbers 58. Two years of collegiate work, including courses in physics, chemistry and biology are required for admission. The course covers four years of eight months each. The total fees for each of the four years, respectively, are $130, $126, $110 and $105. The Dean is Dr. Addison S. Thayer, 10 Deering Street, Portland. The total number of students in 1918-1919 was 45; graduates, 16. The ninety-ninth session begins Oct. 9, 1919, and ends June 21, 1920.

MARYLAND

Maryland, with a population of 1,368,240, contains two medical colleges, located in Baltimore, a city with 589,621 inhabitants. They are as follows: Johns Hopkins University Medical Department, and the University of Maryland School of Medicine and College of Physicians and Surgeons, the last two having been merged.

To be eligbile to practice medicine in Maryland, all students matriculating in the session of 1914-15 and 1918-19, in addition to a four-year high school education, must have completed, respectively, one year and two years of college work including courses in physics, chemistry, biology and French or German, prior to beginning the study of medicine.

Baltimore

Johns Hopkins University Medical Department, Washington and Monument Streets.—Organized in 1893. The first class graduated in 1897. The faculty consists of 50 professors and 131 clinical professors, etc., a total of 181. The requirements for admission demand that the applicant either has (*a*) completed the chemical-biologic course which leads to the A.B. degree in the university, or (*b*) graduated at an approved college or scientific school and has a knowledge of French and German, physics, chemistry and biology, such as may be obtained from a year's course. The course extends over four years of eight and one-half months each. The total fees are $267 each year. The Dean is Dr. J. Whitridge Williams. Total registration for 1918-1919 was 374; graduates, 93. The twenty-seventh session begins Sept. 30, 1919, and ends June 15, 1920.

University of Maryland School of Medicine and the College of Physicians and Surgeons, Lombard and Green Streets.—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine. Baltimore Medical College was merged into it in 1913. In 1915 the College of Physicians and Surgeons was merged and the present name assumed. The combined faculty numbers 173. Two years of collegiate work are required for admission. The course covers four years of eight months each. The total fees are $205 each year; The Dean is Dr. J. M. H. Rowland. Total registration for 1918-1919 was 235; graduates, 50. The thirteenth session begins Oct. 1, 1919, and ends June 1, 1920.

MASSACHUSETTS

Massachusetts, population 3,747,564, has five medical colleges: Medical School of Harvard University, Boston University School of Medicine, Tufts College Medical School, College of Physicians and Surgeons and the Middlesex College of Medicine and Surgery. They are all situated in Boston, a city of 756,476, except the last named which is in Cambridge.

Boston

Medical School of Harvard University, 240 Longwood Avenue.—Organized in 1782. The first class graduated in 1788. It has a faculty of 63 professors and 206 instructors and assistants, a total of 269. Candidates for admission must present a college degree or two years of work leading to such a degree with standing in the upper third of the class. The college work must include a year of physics, biology, general chemistry, a half year of organic chemistry, and a reading knowledge of French or German. The total fees for each of the four years are $230, $225, $225 and $225. The Dean is Dr. David L. Edsall. The total registration for 1918-1919 was 399; graduates 98. The one hundred and thirty-eighth session begins Sept. 22, 1919, and ends May 29, 1920.

Boston University School of Medicine, 80 East Concord Street.—Organized in 1873. In 1874 the New England Female Medical College,

founded in 1848, was merged into it. The first class graduated in 1874. Became nonsectarian in 1918. Two years of collegiate work are required for admission. The faculty includes 25 professors, 54 associates, etc., making a total of 79. The course covers four years of eight months each. Total fees for each of the four years, respectively, are $182.50, $169.50, $167.50, $190. The Dean is Dr. John P. Sutherland. Total registration for 1918-1919 was 60; graduates, 12. The forty-seventh session begins Oct. 2, 1919, and ends June 2, 1920.

TUFTS COLLEGE MEDICAL SCHOOL, 416 Huntington Avenue.—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. It has a faculty of 42 professors and 61 assistants, lecturers, etc., a total of 103. Two years of collegiate work is required for admission. The course covers four years of eight months each. The total fees for each of the four years are $177.50, $169, $155 and $155. The Dean is Dr. Charles F. Painter. Total registration for 1918-1919 was 358; graduates, 92. The twenty-fourth session begins Sept. 22, 1919, and ends June 15, 1920.

COLLEGE OF PHYSICIANS AND SURGEONS, 517 Shawmut Avenue.—Organized in 1880. The first class graduated in 1882. Total attendance of medical students during 1918-1919 was about 35. There were 6 graduates. *This college has been reported not recognized by the Massachusetts Medical Society and by the licensing boards of thirty states.*

Cambridge

MIDDLESEX COLLEGE OF MEDICINE AND SURGERY, Cambridge.—Organized in 1914 under the charter of the Worcester Medical College, which became extinct in 1859. A class was graduated in 1915 and each subsequent year. Was closely related in its interests with an osteopathic college and granted a liberal advanced standing for work done in that and other osteopathic colleges. During 1918-1919 it had a total enrolment of about 77; graduates, 10. *This college has been reported as not recognized by the licensing boards of thirty-six states.*

MICHIGAN

Michigan, population 3,074,560, has three medical colleges. Two of these, the University of Michigan Department of Medicine and Surgery and the Homeopathic Medical College of the University of Michigan, are located at Ann Arbor, a city of 14,979 people. The Detroit College of Medicine and Surgery is located at Detroit, a city of 571,784 inhabitants.

To be eligible for license to practice medicine in Michigan, all students matriculating in and after the sessions of 1914-15 and 1918-19, in addition to an accredited four-year high school education, must have completed, respectively, one year and two years of work in an approved college of liberal arts, including college courses in physics, chemistry, biology and French or German, prior to beginning the study of medicine.

Ann Arbor

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL.—Organized in 1850 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1851. Present title assumed in 1915. It has a faculty composed of 18 professors and 88 associates, instructors, etc., a total of 106. The entrance requirements are two years of college work, including courses in chemistry, physics and biology, with laboratory work, and a reading knowledge of one modern language. The curriculum embraces four years of nine months each. The total fees for Michigan students are $105 each year and $125 for nonresidents. The Dean is Dr. Victor C. Vaughan. The total registration for 1918-1919 was 361; graduates, 54. The seventieth session begins Sept. 30, 1919, and ends June 24, 1920.

UNIVERSITY OF MICHIGAN HOMEOPATHIC MEDICAL SCHOOL.—Organized in 1875. The first class graduated in 1877. The work of the first two years is taken under the same teachers and in the same classes with the Medical School of the University of Michigan, and the fees charged are the same. The faculty for the last two years composes 6 professors and 11 associates, instructors, etc. The entrance requirements are two years of collegiate work. The Dean is Dr. W. B. Hinsdale. The total registration for 1918-1919 was 31; graduates, 11. The next session begins Sept. 30, 1919, and ends June 24, 1920.

Detroit

DETROIT COLLEGE OF MEDICINE AND SURGERY, 250 St. Antoine Street.—Organized as the Detroit College of Medicine in 1885 by consolidation of Detroit Medical College, organized in 1868, and the Michigan College of Medicine, organized in 1880. Reorganized with present title in 1913. The first class graduated in 1886. In 1918 it became a municipal institution under the control of the Detroit Board of Education. Entrance requirements are two years of collegiate work. The faculty embraces 27 professors, 123 lecturers, etc., a total of 150. The course covers four years of eight months each. The fees for the four years, respectively, are $155, $150, $150 and $180. The dean is Dr. W. H. MacCraken. The total registration for 1918-1919 was 132; graduates, 29. The thirty-fifth session begins Oct. 6, 1919, and ends June 26, 1920.

MINNESOTA

Minnesota, population 2,296,024, contains one medical school, the University of Minnesota Medical School, situated in Minneapolis, a city of 363,454 inhabitants.

Candidates for license to practice medicine in Minnesota who graduated subsequent to June 1, 1912, in addition to an accredited four-year high school education, must have completed two years of work the equivalent of that done in the liberal arts department of the University of Minnesota, including courses in physics, chemistry and biology, prior to beginning the study of medicine.

Minneapolis

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL.—Organized in 1883 as the University of Minnesota College of Medicine and Surgery, reorganized in 1888 by absorption of St. Paul Medical College and Minnesota Hospital College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons, organized in 1883, was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. Present title in 1913. The faculty includes 76 professors and 107 instructors and assistants, a total of 183. The curriculum covers four years of nine months each and a year's internship in an approved hospital. The entrance requirements are two years of university work, which must include one year each of physics, general chemistry, qualitative analysis, zoology or botany, and French or German, all in addition to a four-year high school course, including two years of Latin. Students entering hereafter will be required to secure a degree of B.S. or A.B. before the M.D. is granted. Total fees are $150 each year. The Dean is Dr. E. P. Lyon. The total registration for 1918-1919 was 286; graduates, 54. The thirty-first session begins Oct. 1, 1919, and ends June 17, 1920.

MISSISSIPPI

Mississippi, population 1,964,122, has one medical college, the Department of Medicine of the University of Mississippi, which is located at Oxford, a city of 2,014 inhabitants.

Candidates for license to practice medicine in Mississippi who matriculate in the sessions of 1915-16 and of 1919-20 and thereafter, in addition to a standard four-year high school education, must have completed, respectively, one year and two years of work in an approved college or university, including courses in physics, chemistry, biology and a modern language, before entering on the study of medicine.

Oxford

UNIVERSITY OF MISSISSIPPI SCHOOL OF MEDICINE.—Organized in 1903. Gives only the first two years of the medical course. In 1908 a clinical department was established at Vicksburg, but was discontinued in 1910 after graduating one class. The session extends over eight and a half months. Entrance requirements are two years of collegiate work. The total fees each year are $122. The faculty numbers 18. The Dean is Dr. W. S. Leathers. The total registration for 1918-1919 was 48. The seventeenth session begins Sept. 17, 1919, and ends June 1, 1920.

MISSOURI

Missouri, population 3,420,143, has six medical colleges. St. Louis, population 757,309, contains three of these, viz., the School of Medicine of St. Louis University, Washington University Medical School, and the St. Louis College of Physicians and Surgeons. Kansas City, with a population of 297,847, has two colleges, the Kansas City College of Medicine and Surgery and the Kansas City University of Physicians and Surgeons. The School of Medicine of the University of Missouri is at Columbia, a town of 12,103 people.

Columbia

UNIVERSITY OF MISSOURI SCHOOL OF MEDICINE.—Organized at St. Louis in 1845; was discontinued in 1855, but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909. The faculty includes 9 professors and 16 assistant professors, lecturers, etc., a total of 25. The course covers two years of nine months each. The entrance requirements are two years of college work including French or German, 8 hours; general zoology, 8 hours; physics, 8 hours; inorganic chemistry, 8 hours, and general bacteriology, 3 hours. Total fees are $80 for the first and $51 for the second year. The Dean is Dr. Guy L. Noyes. Total registration for 1918-1919 was 65. The next session begins Aug. 29, 1919, and ends April 22, 1920.

Kansas City

KANSAS CITY COLLEGE OF MEDICINE AND SURGERY, Eclectic, Twenty-Third and Holmes Streets.—Organized in 1915 as an offshoot of the Eclectic Medical University, a Class C medical school, now extinct. Total registration for 1918-1919 was about 97; graduates, 31. Since this school is an offshoot of a Class C medical college and is *reported not recognized by the Missouri State Board of Health and by the licensing boards of thirty-two other states*, no higher rating can be granted to it, pending an inspection which it has refused.

KANSAS CITY UNIVERSITY OF PHYSICIANS AND SURGEONS, 729 Troost Street.—Originally chartered in 1903 as the Central College of Osteopathy; charter amended in 1917, by which it obtained the right to grant degrees in medicine, and the name was changed to the Central College Medical Department. Present title in 1918. Very liberal advanced standing allowed for work done in osteopathic colleges. There were 136

medical students enrolled in 1918-1919, of whom 75 graduated. Rated in Class C by the Council on Medical Education. *Reported not recognized by the licensing boards of Missouri and of thirty-three other states.*

St. Louis

WASHINGTON UNIVERSITY MEDICAL SCHOOL, Kingshighway and Euclid Avenue.—Organized in 1842 as the Medical Department of St. Louis University. In 1835 it was chartered as an independent institution under the name of St. Louis Medical College. The first class graduated in 1843. In 1891 it became the Medical Department of Washington University. In 1899 it absorbed the Missouri Medical College. The faculty comprises 31 professors and 83 lecturers, instructors, etc., a total of 114. Two full years of college work are required for admission, including courses in English, physics, chemistry and biology and a reading knowledge of German. The course is four years of eight months each. The total fees for the four years are, respectively, $205, $200, $200 and $205. The Dean is Dr. G. Canby Robinson. The total registration for 1918-1919 was 156; graduates, 50. The next session begins Sept. 25, 1919, and ends June 10, 1920.

ST. LOUIS UNIVERSITY SCHOOL OF MEDICINE, 1402 South Grand Avenue.—Organized in 1901 as the Marion-Sims-Beaumont Medical College by union of Marion Sims Medical College, organized in 1890, and Beaumont Hospital Medical College, organized in 1886. First class graduated in 1902. It became the Medical Department of St. Louis University in 1903. The faculty is composed of 47 professors, 80 lecturers and assistants, a total of 127. One year of college subjects preliminary to the four years of medical subjects is given in the medical school. Two years of collegiate work are required for admission. The curriculum covers four years of thirty-two weeks each. Summer semester optional. The total fees are $175 each year. The Dean is Dr. Hanau W. Loeb. The total registration for 1918-1919 was 253; graduates, 49. The next session begins Oct. 1, 1919, and ends May 31, 1920.

ST. LOUIS COLLEGE OF PHYSICIANS AND SURGEONS, Jefferson and Gamble Streets.—Organized in 1869. Classes graduated in 1870 and each subsequent year until 1873, when it suspended. Reorganized in 1879. Classes graduated in 1880 and subsequent years until 1915, when it merged with the Medical Department of the National University of Arts and Sciences. Reestablished in 1916. The Dean is Dr. Waldo Briggs. Registration during 1918-1919, 52; graduates, 24. The next session begins Oct. 1, 1919, and ends June 3, 1920. *This college is reported as not recognized by the licensing boards of Missouri and thirty-seven other states.*

NEBRASKA

Nebraska, population 1,277,750, has two medical colleges. The University of Nebraska College of Medicine and the John A. Creighton Medical College of Omaha, population 165,470.

Omaha

JOHN A. CREIGHTON MEDICAL COLLEGE, Fourteenth and Davenport Streets.—It is the Medical Department of Creighton University. Organized in 1892. The first class graduated in 1893. It has a faculty of 18 professors and 40 associates, lecturers and assistants, a total of 58. Two years of collegiate work are required for admission. The course of study embraces four years of eight months each. Continuous session adopted for seniors only. The total fees each year for the four years are, respectively, $166, $156, $156, and $161. The Dean is Dr. Herman von W. Schulte. Total registration for 1918-1919 was 92; graduates, 19. The thirty-eighth session begins Sept. 22, 1919, and ends June 5, 1920.

UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE, Forty-Second Street and Dewey Avenue.—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. In 1902 it affiliated with the University of Nebraska, with the present title. The first two years were given at Lincoln and the last two in Omaha until 1913, when all four years were transferred to Omaha. The faculty is composed of 22 professors and 46 lecturers and instructors, total 68. Two years of collegiate work are required for admission, including courses in physics, chemistry, zoology and a modern language. The fees for each of the four years, respectively, are $135, $130, $120 and $120. The Dean is Dr. Irving S. Cutter. Total registration for 1918-1919 was 162; graduates, 34. The next session begins Sept. 22, 1919, and ends June 10, 1920.

NEW HAMPSHIRE

New Hampshire, population 443,467, has one medical college, located at Hanover, population 2,075.

To be eligible for license to practice medicine in New Hampshire, all students matriculating in and after the session of 1915-16, in addition to a four-year high school education, must have completed at least two years of work in an approved college of liberal arts, prior to beginning the study of medicine.

DARTMOUTH MEDICAL SCHOOL.—Organized as New Hampshire Medical Institute in 1797. The first class graduated in 1798. It is under the control of the trustees of Dartmouth College. Clinical teaching was discontinued in 1914. The faculty is made up of 11 professors and 1 instructor, a total of 12. Two years of collegiate work are required for admission. The course covers nine calendar months in each year, or eight months of actual teaching. Candidates for the B.S. degree in Dartmouth College may substitute the work of the first two years in medicine for that of the junior and senior years in the academic department. Candidates for the A.B. degree may make a similar saving of one year. The fees for each year are $180. Dean, Dr. John M. Gile; Secretary, Colin C. Stewart. The total registration for 1918-1919 was 34. The next session opens Sept. 25 1919, and ends June 23, 1920.

NEW YORK

New York State, population 10,366,778, has eight medical colleges. Five of these, College of Physicians and Surgeons (Columbia University), Long Island College Hospital, New York Homeopathic Medical College and Flower Hospital, Cornell University Medical College and the University and Bellevue Hospital Medical College are located in New York City, population 5,602,841. Albany Medical College is located in Albany, a city of 110,199 people. The University of Buffalo Medical Department is situated in Buffalo, population 468,558. The College of Medicine, Syracuse University, is in Syracuse, a city of 155,624 inhabitants.

To be eligible to receive a license to practice in New York, students matriculating in 1918-19 and thereafter must have completed two years of college work before entering on the study of medicine. This applies to graduates of 1922 and thereafter.

Albany

ALBANY MEDICAL COLLEGE, 58-64 Eagle Street.—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915 Union University assumed full control. The faculty is composed of 22 professors and 41 instructors, assistants, etc., a total of 63. One year of collegiate work, including college courses in physics, chemistry, biology, English, and French or German, is required for admission. Two years of college work are required for admission. The curriculum covers four years of eight months each. The fees for the four years, respectively, are $195, $180, $165 and $165. The Dean is Dr. Thomas Ordway. The total registration for 1918-1919 was 66; graduates, 12. The eighty-ninth session begins Sept. 22, 1919, and ends June 9, 1920.

Buffalo

UNIVERSITY OF BUFFALO MEDICAL DEPARTMENT, High Street, near Main.—Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1898. The faculty is composed of 30 professors and 77 lecturers, assistants etc., a total of 107. Two years of collegiate work, including college courses in physics, chemistry, biology, English and French or German are required for admission. The course covers four years of eight months each. The total fees for each of the four years are $200, matriculation fee $5. The Dean is Dr. C. Sumner Jones. Total registration for 1918-1919 was 183; graduates, 37. The seventy-fourth session begins Sept. 29, 1919, and ends June 11, 1920.

New York

COLUMBIA UNIVERSITY COLLEGE OF PHYSICIANS AND SURGEONS, 437 West Fifty-Ninth Street.—Organized in 1807 by the regents of the University of the State of New York as their medical department. The first class graduated in 1811. In 1860 it became, by affiliation, the Medical Department of Columbia College. It was made a permanent part of Columbia College by legislative enactment in 1891. That institution became Columbia University in 1896. The faculty is composed of 93 professors and 157 instructors, demonstrators, etc. a total of 250. Two years of collegiate work, including courses in physics, chemistry, biology, English and either French or German are required for admission. The work covers four years of eight months each. Continuous sessions adopted for seniors only. The Dean is Dr. Samuel W. Lambert. The total fees for the four years, respectively, are $265, $251, $250 and $275. Total registration for 1918-1919 was 526; graduates, 138. The one hundred and twelfth session begins Sept. 24, 1919, and ends June 2, 1920.

CORNELL UNIVERSITY MEDICAL COLLEGE, First Avenue and Twenty-Eighth Street, New York City, and Ithaca.—Organized in 1898. The first class was graduated in 1899. The work of the first year may be taken either in Ithaca or New York. The faculty is composed of 47 professors and 87 assistants, lecturers, instructors, etc., a total of 134. All candidates for admission must be graduates of approved colleges or scientific schools or seniors of approved colleges which will permit them to substitute the first year of this medical school for the fourth year of their college course and will confer on them the Bachelor degree on the completion of the year's work. The candidate must also have such knowledge of physics, inorganic chemistry and biology as may be obtained in college by a year's course in these subjects when accompanied by laboratory work. The fees for each of the four years are, respectively, $240, $235, $235 and $250. The Acting Dean is Dr. Walter L. Niles. Total registration for 1918-1919 was 206; graduates, 29. The twenty-second session begins Sept. 29, 1919, and ends June 10, 1920.

LONG ISLAND COLLEGE HOSPITAL, Henry and Amity Streets, Brooklyn.—Organized in 1858. The first class graduated in 1860. It has a faculty of 20 professors and 108 assistants, instructors, etc., a total of 128. Two years of collegiate work, including college courses in physics, chemistry and biology, are required for admission. The course covers four years of eight months each. Fees: first year, $255; second year, $250; third,

$250, and $275 for the fourth year. The secretary is Dr. Otto V. Huffman. Total registration for 1918-1919 was 370; graduates, 53. The sixty-second session begins Sept. 22, 1919, and ends June 2, 1920.

NEW YORK HOMEOPATHIC MEDICAL COLLEGE AND FLOWER HOSPITAL, Eastern Boulevard, between Sixty-Third and Sixty-Fourth Streets.—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title, New York Homeopathic Medical College, was assumed in 1869. Present title assumed in 1903. The first class graduated in 1861. The course covers four years of eight months each. It has a faculty of 40 professors and 20 lecturers and assistants. The total fees for the four years, respectively, are $220, $210, $200 and $230. Total registration for 1918-1919 was 143; graduates, 23. The sixtieth session begins Sept. 25, 1919, and ends June 5, 1920.

UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE, 338 East Twenty-Sixth Street.—Organized in 1898 by the union of the New York University Medical College, organized in 1841, and the Bellevue Hospital Medical College, organized in 1861. It is the Medical Department of New York University. First class graduated in 1899. The faculty is composed of 71 professors and 89 instructors, etc., in all 160. The course covers four years of eight months each. Entrance requirements are two years of collegiate work, in addition to a standard four-year high school course, including college courses in physics, chemistry and biology. The fees for each of the four years are, respectively, $225, $225, $215, and $240. The Dean is Dr. Samuel A. Brown. Total registration for 1918-1919 was 403; graduates 79. The next session begins Sept. 16, 1919, and ends June 10, 1920.

Syracuse

SYRACUSE UNIVERSITY COLLEGE OF MEDICINE, 307-311 Orange Street.—Organized in 1872, when the Geneva Medical College, chartered in 1834, was removed to Syracuse, under the title "The College of Physicians and Surgeons of Syracuse University." Present title assumed in 1875, when a compulsory three-year graded course was established. The first class graduated in 1873 and a class graduated each subsequent year. In 1889 the amalgamation with the university was made complete. Course extended to four years in 1896. Two years of a recognized college course are required for admission. The course covers four years of thirty-five weeks each. The fees are $210 annually; graduation fee, $10. The faculty is composed of 34 professors and 57 associate and assistant professors, lecturers and instructors. The Dean is Dr. John L. Heffron. The total enrolment for 1918-1919 was 132; graduates, 22. The forty-ninth session begins Sept. 16, 1919, and ends June 9, 1920.

NORTH CAROLINA

North Carolina, population 2,418,559, has two medical schools, each of which gives only the first two years of the medical course. The School of Medicine of the University of North Carolina is located at Chapel Hill, population 1,149. Wake Forest College School of Medicine is at Wake Forest, population 1,443.

To be eligible for a license to practice medicine in North Carolina, graduates of 1918 and 1922 must have completed, respectively, one year and two years of college work including courses in physics, chemistry and biology in addition to 14 units of high school work before beginning the study of medicine.

Chapel Hill

UNIVERSITY OF NORTH CAROLINA SCHOOL OF MEDICINE.—Organized in 1890. Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department at Raleigh. The first class graduated in 1903. A class was graduated each subsequent year, including 1910, when the clinical department at Raleigh was discontinued. Two years of collegiate work are required for admission. The faculty is composed of 12 professors and 12 lecturers, assistants, etc., a total of 24. The fees for each year are $150. The Dean is Dr. I. H. Manning. The total registration for 1918-1949 was 51. The thirty-fourth session begins Sept. 30, 1919, and ends June 11, 1920.

Wake Forest

WAKE FOREST COLLEGE SCHOOL OF MEDICINE.—This school was organized in 1902. The faculty, including the professors of chemistry, physics and biology, numbers 11. Only the first two years of the medical course are offered after the completion of freshman and sophomore college work, and on this combined course the B.S. degree is conferred. Each annual course extends over nine months. The fees for each year aggregate $115. The Secretary is E. B. Earnshaw. The total registration for 1918-1919 was 65. The eighteenth session begins Sept. 2, 1919, and ends May 28, 1920.

NORTH DAKOTA

North Dakota, population 752,260, has one medical college, the School of Medicine of the University of North Dakota, which is situated at University, a suburb of Grand Forks, a city of 15,332 people. It gives only the first two years of the medical course.

Candidates for license to practice medicine in North Dakota who graduated in 1912 and thereafter, in addition to a four-year high school education, must have completed two years of work in an approved college of liberal arts including courses in Latin, physics, chemistry, botany and zoology, prior to beginning the study of medicine. Beginning in 1918, every applicant for a license must show evidence of having spent at least one year as an intern in a hospital.

University

UNIVERSITY OF NORTH DAKOTA SCHOOL OF MEDICINE.—Organized in 1905. Offers only the first two years of the medical course. Two years' work in a college of liberal arts is required for admission. The fees are $50 each year. The faculty consists of 6 professors and 9 instructors, a total of 15. The Dean is Dr. Harley E. French. The total registration for 1918-1919 was 21. The fourteenth session begins Sept. 22, 1919, and ends June 15, 1920.

OHIO

Ohio, population 5,181,220, has five medical colleges. Two of these, the Medical College of the University of Cincinnati and the Eclectic Medical College, are located in Cincinnati, a city of 410,476 inhabitants. Cleveland, population 674,073, contains one medical school, Western Reserve University School of Medicine. Columbus, population 214,878, contains the two departments of the Ohio State University, the College of Medicine and the College of Homeopathic Medicine.

Cincinnati

UNIVERSITY OF CINCINNATI COLLEGE OF MEDICINE, Eden Avenue, Cincinnati General Hospital.—Organized in 1909 by the union of the Medical College of Ohio (founded in 1819) with the Miami Medical College (founded in 1852). The Medical College of Ohio became the Medical Department of the University of Cincinnati in 1896. Under a similar agreement, March 2, 1909, the Miami Medical College also merged into the University, when the title of Ohio-Miami Medical College of the University of Cincinnati was taken. Present title assumed in 1915. Two years of college work are required for admission. The faculty consists of 57 professors, 109 associates, assistants, etc., a total of 166. The course covers four years of eight months each. The fees for each of the first three years are $150 and for the fourth year, $170. The Dean is Dr. Christian R. Holmes. The total registration for 1918-19 was 168; graduates, 27. The next session begins Sept. 30, 1919, and ends June 11, 1920.

ECLECTIC MEDICAL COLLEGE, 630 West Sixth Street.—Organized in 1833 at Worthington as the Worthington Medical College. Removed to Cincinnati in 1843. In 1845 it was chartered as the Eclectic Medical Institute. In 1857 the American Medical College, organized in 1839, was merged into it, and in 1859 the Eclectic College of Medicine and Surgery, organized in 1856, was merged into it. In 1910 it assumed its present title. Classes were graduated in 1833 and in all subsequent years except 1839 to 1843, inclusive. It has a faculty of 26 professors and 10 lecturers and assistants, a total of 36. Two years of college work are required for admission. The course covers four years of eight months each. The total fees for the four years, respectively, are $130, $120, $120 and $130. The Secretary is Dr. John K. Scudder. Total registration for 1918-1919 was 86; graduates, 28. The next session begins Sept. 11, 1919, and ends May 11, 1920.

Cleveland

WESTERN RESERVE UNIVERSITY SCHOOL OF MEDICINE, 1353 East Ninth Street.—Organized in 1843 as the Cleveland Medical College. The first class graduated in 1844. It assumed the present title in 1881. In 1910 it absorbed the Cleveland College of Physicians and Surgeons. The faculty includes 17 professors and 93 lecturers, assistants, etc., a total of 110. The curriculum embraces four years of eight and one-half months each. Three years of college work are required for admission. The total fees for each of the four years are, respectively, $175, $160, $154 and $155. The Dean is Dr. C. A. Hamann. The total registration for 1918-1919 was 180; graduates, 41. The seventy-seventh session begins Oct. 2, 1919, and ends June 17, 1920.

Columbus

OHIO STATE UNIVERSITY COLLEGE OF MEDICINE, 710 North Park Street.—Organized in 1907 as the Starling-Ohio Medical College by the union of Starling Medical College (organized 1847) with the Ohio Medical University (organized 1890). In 1914 it became an integral part of the Ohio State University with its present title. The faculty consists of 34 professors and 59 lecturers, demonstrators, etc., a total of 93. Two years of collegiate work are required for admission. The course covers four years of eight months each. Tuition fees are $152 each year. The Dean is Dr. Eugene F. McCampbell. The total registration for 1918-1919 was 111; graduates, 16. The next session begins Sept. 16, 1919, and ends June 15, 1920.

OHIO STATE UNIVERSITY COLLEGE OF HOMEOPATHIC MEDICINE.—Organized in 1914, when the property of the Cleveland-Pulte Medical College of Cleveland was transferred to the Ohio State University. The faculty numbers 13. Two years of college work are required for admission. The students are taught largely in the same classes and by the same teachers as students of the College of Medicine during the first two years. Tuition fees are $152 each year. The Dean is Dr. Claude A. Burrett. The total registration for 1918-1919 was 36; graduates, 9. The fifth session begins Sept. 16, 1919, and ends June 15, 1920.

OKLAHOMA

Oklahoma, population 2,245,968, has one medical college, the School of Medicine of the University of Oklahoma. The work of the first and second years is given in the academic laboratories at Norman, a city of 3,724 inhabitants. The work of the third and fourth years is given in Oklahoma City, which has a population of 92,943 and which is eighteen miles north of Norman.

To be eligible for license to practice medicine in Oklahoma, all students matriculating in 1914-15 and in 1917-18, in addition to a four-year high school education, must have completed, respectively, one year and two years of work in an approved college of liberal arts, including courses in physics, chemistry, biology and a modern language prior to beginning the study of medicine.

Norman and Oklahoma City

University of Oklahoma School of Medicine.—Organized in 1900. Gave only the first two years of the medical course at Norman until 1910, when a clinical department was established at Oklahoma City. It has a faculty of 50 professors and 14 instructors, a total of 64. Two years of collegiate work are required for admission. The course is four years of nine months each. An optional course of six years is offered for the degree of B.S. and M.D. The total fees for the four years are, respectively, $61, $40, $23 and $23. The Dean is Dr. Leroy Long, 325 East Fourth Street, Oklahoma City. The total registration for 1918-1919 was 73; graduates, 12. The session begins Sept. 11, 1919, and ends June 8, 1920.

OREGON

Oregon, population 848,866, has one medical college, the University of Oregon Medical School, located in Portland, a city of 295,463 population.

Portland

University of Oregon Medical School, Lovejoy and Twenty-Third Streets.—Organized in 1887. The first class graduated in 1888. A class graduated each subsequent year except 1898. Became an integral part of the University of Oregon in 1910. The Willamette University Medical Department was merged in 1913. It has a faculty of 17 professors and 95 lecturers, assistants, etc., a total of 112. Entrance requirements are two years of college work or its equivalent. The course is four years of eight months each. The total fees for the four years are, respectively, $170, $166, $161.75 and $160. The Dean is Dr. K. A. J. Mackenzie. The total registration for 1918-1919 was 66; graduates, 15. The thirty-third session begins Oct. 1, 1919, and ends May 31, 1920.

PENNSYLVANIA

Pennsylvania, population 8,591,029, has six medical colleges. Of these, Philadelphia, having a population of 1,709,518, contains five, as follows: University of Pennsylvania School of Medicine, Jefferson Medical College, Hahnemann Medical College and Hospital, Woman's Medical College of Pennsylvania and Temple University Department of Medicine. The other school, the School of Medicine of the University of Pittsburgh, is situated in Pittsburgh, a city of 579,090.

To be eligible for license to practice medicine in Pennsylvania, students matriculating in the session 1914-15 and thereafter, in addition to a four-year high school education, must have completed a year's work either in an approved college of liberal arts or a preliminary year in the medical college, including college courses in physics, chemistry and biology, before beginning the study of medicine. He must also have completed an internship of at least one year in an approved hospital.

Philadelphia

University of Pennsylvania School of Medicine, Thirty-Sixth Street and Hamilton Walk.—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772-79, inclusive. The original title was the Department of Medicine, College of Philadelphia. The present title, School of Medicine of the University of Pennsylvania, was adopted in 1909. It granted the first medical diploma issued in America. In 1916 it took over the Medico-Chirurgical College of Philadelphia to develop it as a graduate school. The faculty consists of 51 professors, associate, adjunct and assistant professors, and 143 lecturers, associates, instructors, etc., a total of 194. The minimum requirements for admission are a standard four-year high school course or its equivalent, plus two years of work in an approved college of arts and science, including courses in French or German, and in physics, chemistry and general biology or zoology, with appropriate laboratory exercises. The course embraces four years of study of thirty-four weeks each. The total fees for each of the four years are, respectively, $233, $210, $210 and $214. The Dean is Dr. William Pepper. Total registration for 1918-1919 was 467; graduates, 125. The one hundred and fifty-fourth session begins Sept. 26, 1919, and ends June 16, 1920.

Jefferson Medical College, Tenth and Walnut Streets.—Organized in 1825 with its present title as the Medical Department of Jefferson College, Cannonsburg, Pa. Classes have been graduated annually since 1826. In 1838 a separate university charter was granted without change of title, since which time it has continued under the direction of its own board of trustees. It has a faculty of 26 professors, associate and assistant professors, and 137 associates, lecturers, demonstrators and instructors, a total of 163. Entrance requirements are a completed standard four-year high school or college preparatory course, or the equivalent, and in addition two years of work in an approved college of arts and science amounting to at least 60 semester hours, including specified courses in physics, chemistry and biology, with laboratory work amounting to 8 semester hours each. The course of study covers graded work of four years of eight and a half months each. The tuition is $210 a year with a matriculation fee of $5 paid on admission. The Dean is Dr. Ross V. Patterson. The total registration for 1918-1919 was 451; graduates, 142. The ninety-fifth session begins Sept. 22, 1919, and ends June 5, 1920.

Woman's Medical College of Pennsylvania, Twenty-First and N. College Avenue.—Organized in 1850. Classes were graduated in 1852 and in all subsequent years except 1862. It has a faculty of 14 professors and 45 assistants, lecturers, etc., in all 59. Entrance requirements are a completed course in a standard secondary school, and in addition two years of collegiate work, including courses in physics, chemistry, biology and two foreign languages, one of which must be French or German. The curriculum covers four years of eight months each. Fees for each of the four years are, respectively, $198, $202, $184 and $179.50. The Dean is Dr. Martha Tracy. The total registration for 1918-1919 was 66; graduates, 7. The eightieth session begins Oct. 1, 1919, and ends June 16, 1920.

Hahnemann Medical College and Hospital of Philadelphia, 220-24 North Broad Street.—Organized in 1848 as the Homeopathic Medical College of Pennsylvania. In 1869 it united with the Hahnemann Medical College of Philadelphia, taking the latter title. Assumed present title in 1885. The first class graduated in 1849. Entrance requirements are a completed course in a standard secondary school and in addition two years devoted to a college course, including English and either French, German or Spanish, physics, chemistry and biology. It has a faculty of 36 professors and 48 lecturers, instructors, etc., in all 84. The work covers four years of eight and a half months each. Total fees for each of the four years, respectively, are $205, $202, $202 and $217. The Dean is Dr. William A. Pearson. The total registration for the college year 1918-1919 was 138; graduates, 25. The seventy-second session begins Sept. 29, 1919, and ends May 31, 1920.

The Temple University Department of Medicine, Eighteenth and Buttonwood Streets.—Organized in 1901. The first class graduated in 1904. The faculty numbers 97. Two years of college work are required for admission. The fees for each of the four years, respectively, are $175, $170, $160 and $160. The Dean is Dr. Frank C. Hammond. The total registration for 1918-1919 was 95; graduates, 30. The nineteenth session begins Sept. 22, 1919, and ends June 1, 1920.

Pittsburgh

University of Pittsburgh School of Medicine, Bigelow Boulevard.—Organized in 1886, as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pittsburgh, removing to the university campus in 1910. The first class graduated in 1887. The faculty is composed of 16 professors and 114 associates, assistants, etc., 130 in all. Entrance requirements are two years of recognized college work, to have included essentially courses in English, chemistry (inorganic and organic), physics, biology and a reading knowledge of French or German, Italian or Spanish. It is possible for students to get the degree of B.S. and M.D. in six years. The course of study for medicine alone is four years of eight and a half months each. The tuition fee is $250 a year; matriculation fee, $15; diploma fee, $5. The Dean is Dr. Thomas S. Arbuthnot. The total registration for 1918-1919 was 147; graduates, 29. The thirty-fourth session begins Sept. 29, 1919, and ends June 4, 1920.

SOUTH CAROLINA

South Carolina, population 1,634,340, has one medical college, situated in Charleston, a city of 60,734 people.

Graduates of 1922 (matriculants of 1918-19) and thereafter, to be eligible for license to practice medicine in South Carolina must have completed, in addition to 14 units of high school work, two years in an approved college, including courses in English, physics, chemistry and biology.

Charleston

The Medical College of the State of South Carolina, 16 Lucas Street.—Organized in 1823 as the Medical College of South Carolina. The first class graduated in 1825. In 1832 a medical college bearing the present title was chartered and the two schools continued as separate institutions until they were merged in 1838. Classes were graduated in all years except 1862 to 1865, inclusive. In 1913, by legislative enactment, it became a state institution. It has a faculty of 37 professors and 24 lecturers, instructors, etc., a total of 61. The course covers four years of eight months each. Two years of collegiate work including courses in physics, chemistry, biology and a modern foreign language are required for admission, in addition to a standard high school preparation. The total fees are $150 for each of the first two years and $145 for the last two. The Dean is Dr. Robert Wilson, Jr. Total enrolment for 1918-1919 was 66; graduates, 14. The ninety-first session begins Sept. 26, 1919, and ends June 3, 1920.

SOUTH DAKOTA

South Dakota, population 707,740, has one medical college, the University of South Dakota College of Medicine, located at Vermilion, a town of 2,376 people.

To be eligible for license to practice medicine in South Dakota, graduates of 1915 and thereafter must show that they matriculated in and graduated from medical colleges which required at least two years of collegiate work for admission, including courses in physics, chemistry, biology and a modern language. This affects all students who matriculated in the session of 1911-1912 and thereafter.

Vermilion

UNIVERSITY OF SOUTH DAKOTA COLLEGE OF MEDICINE.—Organized in 1907. Offers only the first two years of the medical course. Two years' work in a college of liberal arts are required for admission. The fees are $60 each year. The faculty numbers 10. The Dean is Christian P. Lommen, B.S. The total registration for 1918-1919 was 19. The thirteenth session begins Sept. 29, 1919, and ends June 21, 1920.

TENNESSEE

Tennessee, population 2,296,316, has four medical colleges. Of these, Vanderbilt University Medical Department and Meharry Medical College are situated in Nashville, a city with a population of 117,057. The College of Medicine of the University of Tennessee and the University of West Tennessee College of Medicine and Surgery are located in Memphis, population 148,995.

To be eligible for a license to practice medicine in Tennessee, students matriculating in the session of 1914-1915 and of 1918-1919 must have completed, respectively, one year of collegiate work, including courses in physics, chemistry, biology and a modern language, in addition to a four-year high school course before entering on the study of medicine.

Memphis

UNIVERSITY OF TENNESSEE COLLEGE OF MEDICINE, three buildings, 879 Madison Avenue.—Organized in 1876 at Nashville as Nashville Medical College. First class graduated 1877, and a class graduated each subsequent year. Became Medical Department of University of Tennessee 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The trustees of the University of Nashville by formal action of that board named the University of Tennessee College of Medicine as its legal successor. In 1911 it moved to Memphis, where it united with the College of Physicians and Surgeons. The Memphis Hospital Medical College was merged in 1913. Lincoln Memorial University Medical Department was merged in 1914. The faculty includes 36 professors and 69 assistants, instructors, etc., a total of 105. Entrance requirements are a completed secondary education plus two years of collegiate work. Students taking the two-year premedical course in Knoxville may secure the B.S. and M.D. degrees. The total fees for the four years, respectively, are $107, $102, $102 and $127 for bona fide residents of the state, and $50 more each year for nonresidents. The Dean is Dr. A. H. Wittenborg. Total registration for 1918-1919 was 63; graduates, 20. The next session begins Sept. 20, 1919, and ends June 2, 1920.

UNIVERSITY OF WEST TENNESSEE MEDICAL DEPARTMENT, Colored. 1190 South Phillips Place.—Organized in 1900. The first class graduated in 1904, and a class graduated each subsequent year. It has a faculty of 20. The course covers four years. Two years of college work are required for admission. The fees are $80 per year; graduation, $10 extra. The Dean is Dr. M. V. Lynk. Registration for 1918-1919 was 18; graduates, 4. The twentieth session begins Sept. 22, 1919, and ends about May 23, 1920. *Official reports indicate that the diplomas of this college are not recognized by the licensing boards of Tennessee and thirty-eight other states.*

Nashville

VANDERBILT UNIVERSITY SCHOOL OF MEDICINE.—This school was founded in 1874. The first class graduated in 1875. The faculty consists of 39 professors and 42 lecturers, a total of 81. One year of collegiate work is required for admission. The course covers four years of nearly eight and a half months each. The total fees for the four years, respectively, are $150, $150, $150 and $175. The Dean is Dr. Lucius E. Burch. The total registration for 1918-1919 was 114; graduates, 25. The forty-sixth session begins Sept. 29, 1919, and ends June 9, 1920.

MEHARRY MEDICAL COLLEGE, Colored. 1118 First Avenue, South.—This school was organized in 1876 as the Medical Department of Central Tennessee College, which became Walden University in 1900. First class graduated in 1877. Obtained new charter independent of Walden University in 1916. The faculty is made up of 12 professors and 12 instructors, demonstrators, etc., 24 in all. The work embraces four years of thirty weeks each. The total fees for each of the first three years are $87 and for the fourth years $97. The President is Dr. G. W. Hubbard. Total registration for 1918-1919 was 175; graduates, 41. The forty-fourth session begins Oct. 7, 1919, and ends May 20, 1920.

TEXAS

Texas, population 4,472,494, has two medical colleges. The University of Texas Department of Medicine is located at Galveston, a city of 41,863 inhabitants. The Baylor University College of Medicine is located in Dallas, population 124,527.

To be eligible for a license to practice medicine in Texas, students matriculating in the session of 1914-1915 and thereafter must have completed a year of collegiate work, including courses in physics, chemistry, biology and modern language, in addition to a standard four-year high school course, before entering on the study of medicine.

Dallas

BAYLOR UNIVERSITY COLLEGE OF MEDICINE, 720 College Avenue.—Organized in 1900 as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University at Waco. It acquired the charter of Dallas Medical College in 1904. The first class graduated in 1901. The faculty numbers 49. Entrance requirement is one year of college work in addition to a four-year high school education. For the session of 1918-19 and thereafter two years of collegiate work will be required for admission. The course is four years of eight months each. The fees for each of the four years, respectively, are $160, $155, $155 and $150. The Dean is Dr. E. H. Cary. Total registration for 1918-1919 was 126; graduates, 22. The twentieth session begins Sept. 29, 1919, and ends May 27, 1920.

Galveston

UNIVERSITY OF TEXAS DEPARTMENT OF MEDICINE, Avenue B, between Ninth and Tenth Streets.—Organized in 1891. The first class graduated in 1892. It has a faculty of 20 professors and 18 lecturers and instructors, a total of 38. The curriculum embraces four years of eight months each. The entrance requirement is two years of collegiate work in addition to a four year high school education. The total fees for the four years, respectively, are $78, $48, $30.50 and $18. The Dean is Dr. William S. Carter. Total registration for 1918-1919 was 209; graduates, 51. The twenty-ninth session begins Oct. 1, 1919, and ends May 31, 1920.

UTAH

Utah, population 438,974, has one medical college, the School of Medicine of the University of Utah, situated at Salt Lake City, which has 117,399 people.

To be eligible to secure licenses to practice medicine in Utah, students matriculating in and after the session of 1912-1913, in addition to a four-year high school education, must have completed at least one year of collegiate work prior to beginning the study of medicine, this preliminary college work to have included college courses in physics, chemistry and biology.

Salt Lake City

UNIVERSITY OF UTAH SCHOOL OF MEDICINE.—Organized in 1906. Gives only first two years of medical course. Each course covers thirty-six weeks. Two years of collegiate work are required for admission. The medical faculty consists of 10 professors and 14 lecturers and assistants, a total of 24. The fees are $95 each year. The Dean is Dr. Perry G. Snow. Total registration for 1918-1919 was 28. The thirteenth session begins Sept. 29, 1919, and ends June 6, 1920.

VERMONT

Vermont, population 364,322, has one medical school, located at Burlington, a town of 21,432 people.

Students matriculating in and after the sessions 1912-1913 and of 1918-1919 who desire to practice medicine in Vermont must have obtained a preliminary training, respectively, of one year and of two years of collegiate work, in addition to a standard four-year high school education, this additional years's work to include college courses in physics, chemistry and biology.

Burlington

UNIVERSITY OF VERMONT COLLEGE OF MEDICINE, Pearl Street, College Park.—Organized with complete course in 1822. Classes graduated in 1823 to 1836, inclusive, when the school was suspended. It was reorganized in 1853 and classes were graduated in 1854 and in all subsequent years. The faculty numbers 43. Two years of college work in addition to a four-year high school education are required for admission. The course of study covers four years of nine months each. Continuous session for seniors only. The total fees for each of the first three years are $145, and $170 for the fourth year. The Dean is Dr. H. C. Tinkham. The total registration for 1918-1919 was 90; graduates, 20. The next session begins Sept. 24, 1919, and ends June 30, 1920.

VIRGINIA

Virginia, population 2,202,522, has two medical colleges, one, the Department of Medicine of the University of Virginia, situated in Charlottesville, population 12,500, and the

Medical College of Virginia at Richmond, population 156,687. Only graduates of medical colleges registered by the Virginia State Board of Medical Examiners are eligible to obtain licenses to practice medicine in this state. Medical colleges to be so registered must require of all students admitted in the session of 1914-1915, completion of at least one year, and in the session of 1917-1918 and thereafter two years of collegiate work, including courses in physics, chemistry, biology and a modern language, preferably German, in addition to a four-year high school education.

Charlottesville

UNIVERSITY OF VIRGINIA DEPARTMENT OF MEDICINE.—Organized in 1827. Classes were graduated in 1828 and in all subsequent years except 1865. It has a faculty of 20 professors and 13 lecturers, instructors, assistants, etc., a total of 33. The requirements for admission are the completion of a four-year high school course, or its equivalent, and two years of college work devoted to English, mathematics, chemistry, physics and biology, and French or German. Continuous session adopted for seniors only. Total fees for each year are $140, matriculation fee, $10. The Dean is Dr. Theodore Hough. The total registration for 1918-1919 was 112; graduates, 25. The ninety-first session begins Sept. 18, 1919, and ends June 16, 1920.

Richmond

MEDICAL COLLEGE OF VIRGINIA, Marshall and College Streets.—Organized in 1838 as the Medical Department of Hampden Sydney College. Present title was taken in 1854. In 1913 the University College of Medicine was merged. In 1914 the North Carolina Medical College was merged. Classes were graduated in 1840 and in all subsequent years. It has a faculty of 42 professors and 90 lecturers, instructors, etc., a total of 132. The requirement for admission is a four-year high school education and in addition two years of collegiate work, including courses in physics, chemistry, biology and French or German. The course embraces four years of eight months each. The total fees for the four years, respectively, are $199, $200, $200 and $230. The Dean is Dr. Alfred L. Gray. The total registration for 1918-1919 was 123; graduates, 20, including 3 students of the North Carolina Medical College, who were granted degrees by the latter. The ninety-first session begins Sept. 17, 1919, and ends June 3, 1920.

WEST VIRGINIA

West Virginia, population 1,399,320, has one medical college, the School of Medicine of West Virginia University, which offers the first two years of the medical course. It is located at Morgantown, a city of 12,974 population.

Graduates of 1921 (matriculants of 1917-1918) and thereafter, in order to secure licenses to practice medicine in West Virginia, must have completed, in addition to a high school education, one year of collegiate work, including courses in physics, chemistry and biology, before entering on the study of medicine.

Morgantown

WEST VIRGINIA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1902, and gives only the first two years of the medical course. Two years of college work are required for admission and the Bachelor's degree will be granted to those who finish the two years in medicine. Session extends through nine months. The faculty numbers 10. Fees: For residents of the state, tuition $25 each year, matriculation, $5; for nonresidents, tuition, $40; matriculation fee, $10. The Dean is Dr. John N. Simpson. The total registration for 1918-1919 was 39. The next session begins Sept. 22, 1919, and ends June 15, 1920.

WISCONSIN

Wisconsin, population 2,513,758, has two medical colleges, the Medical School of the University of Wisconsin, which teaches the first two years of the medical course, and is located at Madison, a city of 30,699 people, and the Marquette University School of Medicine, located at Milwaukee, a city of 436,535 people.

To be eligible for licenses to practice medicine in Wisconsin, students matriculating in the session of 1915-1916 (graduates of 1919) and thereafter, prior to entering a medical school, must have completed, besides a four-year high school course, two years of collegiate work, including courses in physics, chemistry, biology and a modern language.

Madison

UNIVERSITY OF WISCONSIN MEDICAL SCHOOL.—Organized in 1907. Gives only the first two years of the medical course. For matriculation at least two years in a college of arts and science or an equivalent training are required, including two years of Latin, a reading knowledge of French or German, and at least a year's work in physics, chemistry and biology. It has a faculty of 16 professors and 21 lecturers, instructors, etc., a total of 37. Tuition fees: For residents of the state, $75 each year; for nonresidents, $199. The Dean is Dr. Charles R. Bardeen. The registration for 1918-1919 was 118. The twelfth session begins Sept. 29, 1919, and ends June 16, 1920.

Milwaukee

MARQUETTE UNIVERSITY SCHOOL OF MEDICINE, Fourth Street and Reservoir Avenue.—Organized in December, 1912, by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. It has a faculty of 51 professors and 36 assistants, instructors, etc., a total of 87. The entrance requirements include, in addition to a four-year high school education, two years of college work, including courses in physics, chemistry, biology and a modern language. The curriculum is for four years of thirty-four weeks each. The total fees for the four years, respectively, are $220, $220, $220 and $230. The Dean is Dr. Louis F. Jermain. The registration for 1918-1919 was 73; graduates, 13. The eighth session begins Oct. 1, 1919, and ends June 17, 1920.

PHILIPPINE ISLANDS

The Philippine Archipelago, having a population (estimated 1917) of 8,879,999, has two medical colleges, the University of the Philippines College of Medicine and Surgery and the Medical Faculty of the University of St. Thomas. They are located in the city of Manila, which in 1910 had a population of 234,409.

Manila

UNIVERSITY OF THE PHILIPPINES COLLEGE OF MEDICINE AND SURGERY, Manila.—Organized in 1907 as the Philippine Medical School, under the support of the government of the Philippine Islands. Present title in 1910. The faculty includes 34 professors and 40 lecturers, assistants, etc., a total of 74. Two years of collegiate work leading to the degree of Bachelor of Arts are required for admission. The course extends over five years of nine months each with an additional sixth year of intern service. The Dean is Dr. Fernando Calderon. The total registration for 1918-1919 was 155; graduates, 24. The thirteenth session began July 1, 1919, and ends April 4, 1920.

CANADA

The Dominion of Canada has nine medical colleges, all but one of which require a five-year course, including in the first year courses in physics, chemistry and biology. This course is practically equal to that in the colleges of the United States which require one year of college work for admission, including the science courses named. None of the Canadian colleges has a minimum requirement of two years of collegiate work, or its equivalent, preliminary to or as a part of the medical course. The medical school at Edmonton, Alberta, gives only the first two years of the medical course, or three years, including the preliminary science year.

Alberta

UNIVERSITY OF ALBERTA, FACULTY OF MEDICINE, Edmonton.—Organized in 1913. Offers only the first three years of the five-year medical course, including the preliminary science year. The faculty numbers 12. Fees for the first year are $63; for the second and third years, each $88. The registrar is Cecil E. Race, B.A. The registration for 1918-1919 was 89. The seventh session begins Sept. 30, 1919, and ends May 13, 1920.

Manitoba

MANITOBA MEDICAL COLLEGE, Winnipeg.—It is the Medical Faculty of the University of Manitoba. Organized in 1883, first class graduated in 1886 and a class graduated each subsequent year. The faculty numbers 60. The total fees for the five years, respectively, are $175, $165, $170, $160 and $160. The entire course covers five years, the first year including premedical courses in physics, chemistry and biology. The Dean is Dr. S. Willis Prowse. Total registration for 1918-1919 was 156; graduates, 30. The next session begins Sept. 15, 1919, and ends May 7, 1920.

Nova Scotia

DALHOUSIE UNIVERSITY, FACULTY OF MEDICINE, Halifax, N. S.—Organized in 1867. Incorporated as the Halifax Medical College in 1875. Reorganized as an examining faculty, separate from the Halifax Medical College in 1855. In 1911, in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College, the work of the latter institution was discontinued and a full teaching faculty was established by the University. By an arrangement between Dalhousie University and the Provincial Medical Board of Nova Scotia, the final professional examinations are conducted conjointly by the university and the board, and candidates may qualify at the same time for their academic degrees and the provincial license. First class graduated in 1872. It has a faculty of 35 professors, lecturers and demonstrators. Requires matriculation examination and a graded course of five years, including premedical courses in physics, chemistry and biology. The fees are $115 for each of the first two years and $125 for each of the other three. The total registration for 1918-1919 was 113; graduates, 10. The Secretary is Prof. D. Fraser Harris. The next session begins Oct. 1, 1919, and ends May 27, 1920.

Ontario

UNIVERSITY OF TORONTO, FACULTY OF MEDICINE, Toronto.—Organized in 1843 as the Medical Faculty of King's College. Abolished in 1853. Reestablished in 1887. In 1902 it absorbed Victoria University, Medical Department, and in 1903 absorbed Trinity Medical College. The course of study covers five years of eight months each, the first year including premedical courses in physics, chemistry and biology. It has a faculty of 53 professors and 163 lecturers, associates, etc., a total of 216. The fees are $150 each year; graduation fee, $20. The Dean is Dr. C. K. Clarke. The total registration for 1918-1919 was 698; graduates, 56. The next session begins Sept. 30, 1919, and ends May 31, 1920.

QUEEN'S UNIVERSITY FACULTY OF MEDICINE, Kingston.—Organized 1854, first class graduated in 1855, and a class graduated each subsequent year. The faculty was originally a department of the university, but a separation took place in 1866, when the school was conducted under the charter of the Royal College of Physicians and Surgeons at Kingston. In 1892 the school again became an integral part of Queen's University. The faculty includes 26 professors and 20 assistants, instructors, etc., a total of 46. The fees amount to $125 each year; fee for M.D., C.M. degrees, $30. The course covers five years of thirty teaching weeks each, the first year including courses in physics, chemistry and biology. The total registration in 1918-1919 was 228; graduates, 61. The Dean is Dr. J. C. Connell. The next session begins Sept. 22, 1919, and ends June 9, 1920.

WESTERN UNIVERSITY, FACULTY OF MEDICINE, London.—Organized in 1881, first class graduated in 1883, and a class graduated each year subsequently. The Faculty of Medicine became an integral part of Western University in 1913. The faculty numbers 53. The course is five years of eight months each, the first year including premedical courses in physics, chemistry and biology. The total fees for the five years, respectively, are $125, $120, $128, $120 and $145. The Acting Dean is Dr. Paul S. McKibben. Total registration for 1918-1919 was 93; graduates, 16. The next session begins Oct. 1, 1919, and ends May 30, 1920.

Montreal

MCGILL UNIVERSITY, FACULTY OF MEDICINE.—Founded 1824 as Montreal Medical Institution; became the Medical Faculty of McGill University in 1829; first class graduated under the university auspices in 1833. No session between 1836-39 owing to political troubles. In 1905 it absorbed the Faculty of Medicine of the University of Bishop College. The course extends over five years of eight months each, including the preliminary year devoted largely to physics, chemistry and biology. The faculty numbers 138. The total fees for the five years, respectively, are $174, $174, $174, $174 and $204. The total registration for 1918-1919 was 471; graduates, 78. The Registrar is Dr. John W. Scane. The next session begins Oct. 1, 1919, and ends May 30, 1920.

MONTREAL SCHOOL OF MEDICINE AND SURGERY, Montreal.—Organized in 1843, incorporated in 1845. In 1891, by act of parliament, the Medical Faculty of Laval University (organized in 1878) was absorbed. Present name assumed in 1911. A class was graduated in 1843 and in each subsequent year. The faculty numbers 80. The course extends over five years, including premedical courses in physics, chemistry and biology. The total fees for the five years, respectively, are $110, $118, $126, $126 and $138. The Dean is Dr. E. P. Lachapelle. The total registration for 1918-1919 was 241; graduates, 23. The next session begins Oct. 3, 1919, and ends June 30, 1920.

Quebec

LAVAL UNIVERSITY FACULTY OF MEDICINE, Quebec.—The Quebec School of Medicine, organized in 1848, became in 1852 the Medical Department of Laval University; first class graduated in 1855, and a class graduated each subsequent year. The faculty numbers 35. The fees are $90 each year. The course extends over five years, the first year including courses in physics, chemistry and biology. The Dean is Dr. Edwin Turcot, Quebec. Total registration for 1918-1919 was 148; graduates, 22.

THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES

The requirements for admission to and graduation from colleges holding membership in this association are 14 units (15 units after Jan. 1, 1920) of high school work and two years (60 semester hours) of college work.

CURRICULUM: The entire course of four years shall consist of not less than 3,600 hours, and shall be grouped in divisions and subdivided into subjects, each division and each subject to be allotted approximately the number of hours and percentages of the whole shown in the following schedule:

DIVISION I.

ANATOMY, 684 HOURS (19%).	Minimum % of 3,600 Hours.
1. Gross anatomy, including clinical or applied anatomy	19%
2. Microscopic anatomy	
3. Embryology	

DIVISION II.

PHYSIOLOGY AND CHEMISTRY, 468 HOURS (13%).

1. Physiology	8%
2. Biochemistry	5%

DIVISION III.

PATHOLOGY AND BACTERIOLOGY, 468 HOURS (13%).

1. Pathology, including necropsies	8 %
2. Bacteriology, including serology and immunology	3½%
3. Preventive medicine and public health	1½%

DIVISION IV.

PHARMACOLOGY, 216 HOURS (6%).

1. Materia medica and pharmacy	6%
2. Pharmacology	

DIVISION V.

MEDICINE AND MEDICAL SPECIALTIES, 900 HOURS (25%).

1. General medicine, including laboratory diagnosis	15 %
2. Pediatrics	4 %
3. Nervous and mental diseases	3½%
4. Dermatology and syphilis	2 %
5. Medical jurisprudence	½%

DIVISION VI.

SURGERY AND SURGICAL SPECIALTIES, 648 HOURS (18%).

1. Surgery	11 %
2. Orthopedic surgery	2 %
3. Urology	1 %
4. Ophthalmology	1½%
5. Otology, rhinology and laryngology	1½%
6. Roentgenology	1 %

DIVISION VII.

OBSTETRICS AND GYNECOLOGY, 216 HOURS (6%).

1. Obstetrics, including obstetric surgery	4 %
2. Gynecology	2 %

When teaching conditions demand it, a subject may be transferred from one division to another.

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Marquette University School of Medicine.
University of Wisconsin Medical School.

The secretary-treasurer of the Association is Dr. Fred C. Zapffe, 3431 Lexington Street, Chicago.

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SATURDAY, AUGUST 16, 1919

MEDICAL EDUCATION IN THE UNITED STATES

For the nineteenth consecutive year we publish this week statistics dealing with medical education in the United States. The statistics this year show a continuation of the steady improvement since the publishing of the statistics was begun in 1901.

CHANGES OF THE YEAR

The figures show a total enrolment of 13,052 medical students, or 578 less than a year ago. Divided by classes, the total enrolment in the second, third and fourth year classes showed an increase of 601 over the previous year, but this was more than offset by the decrease of 1,179 students in the first year class due largely, if not entirely, to the volunteering or drafting of premedical and freshmen students during 1918. The medical schools had already passed the low ebb in the enrolments resulting from the enforcement of higher entrance requirements, and an increase was expected. The indications are that had it not been for the war, there would have been an increase this year instead of a decrease, in the total enrolment of medical students. The total percentage of students in Class A medical schools was increased during the year from 84.5 to 87.9, whereas, in the Class B schools the percentage was decreased from 10.9 to 8.3, and the percentage in Class C schools was reduced from 4.5 to 3.8.

The total number of graduates this year was 2,656, or only fourteen less than in 1918. The number of graduates from Class A schools, however, increased from 2,024 to 2,220, while the numbers of those graduating from Class B schools decreased from 399 to 268, and from Class C schools from 247 to 168. It is also noteworthy that the number of graduates holding degrees from colleges of arts and sciences increased from 1,024 to 1,180.

The number of medical colleges decreased from ninety to eighty-five, resulting from the closing of two Class A medical schools (one of which was by merger), one Class B institution and two which were rated in Class C. It is encouraging, therefore, that the reductions of the year have been in the number of students and graduates of the inferior medical colleges, and that the numbers enrolled in the better institutions have been increased.

CHANGES IN FIFTEEN YEARS

The improvements in medical education during the last fifteen years have been remarkable. At the beginning of the campaign for improvement, the United States had more medical schools than all the rest of the world combined, the supply far exceeding the needs of the country. While the number of colleges has been reduced from 162 to eighty-five during the fifteen years, on the other hand, the number enforcing an entrance requirement of two years or more of collegiate work increased from four, or 2.5 per cent. of all colleges, in 1904 to seventy-eight, or 92.9 per cent. of all colleges, in 1919. The number of medical students was decreased from 28,142 to 13,052, but at the same time the number who had higher preliminary qualifications was increased from 1,761, or 6.2 per cent. of all students, in 1904 to 12,570, or 96.3 per cent. of all students, in 1919. While the number of graduates was reduced from 5,747 to 2,656, at the same time the number of graduates who had the better preliminary qualifications was increased from 369, or 6.4 per cent. of all graduates, in 1904 to 2,492, or 94.9 per cent. of all graduates, in 1919. While the annual totals of colleges, students and graduates have been decreased by about 50 per cent., the number of better colleges has been multiplied by eighteen, and the number of better qualified students and graduates has been multiplied by seven.

OTHER IMPROVEMENTS IN MEDICAL EDUCATION

The improvement in regard to admission requirements, however, is merely an index of changes for the better in other respects. Formerly, the majority of schools were of the independent type; now, almost all are integral parts of high grade universities. Formerly, a large majority of the medical schools were dependent solely on students' fees for maintenance; now, practically all are enjoying larger incomes either from state appropriations or from private endowment. In addition, many of the schools have erected new college buildings, have established additional and better equipped laboratories, and have employed a larger number of better trained teachers who devote all their time to teaching and research. Almost all of the colleges have established more intimate relationships with hospitals by which more abundant clinical facilities are provided and better clinical teaching is made possible. Also, in all the schools the courses of instruction are better graded, and better methods of teaching are employed.

COST OF MEDICAL EDUCATION

These improvements have added largely to the cost of medical education. Actual statistics show that the cost of teaching in eighty-two medical schools in 1916

exceeds by about three times the sum obtained from students' fees. At the same time the cost to the medical students in tuition fees has been only moderately advanced. A number of the high grade state university medical schools charge very low fees for residents of the respective states. During the last fifteen years also there have been made available more than 300 scholarships and generous loan funds in thirty-seven of the better medical schools, so that needy but deserving medical students still have abundant opportunities to study medicine. There is certainly no excuse for continuing a low quality of medical education for the sake of "the poor boy" who, by the way, is usually sufficiently acquainted with values to seek the better and not the poorer medical schools.

PROPORTION OF PHYSICIANS TO POPULATION

While there has been a decided reduction in the total numbers of medical students and graduates, we are still far from experiencing a dearth of physicians. That there should be a special demand for physicians during the war was to be expected, and was merely a parallel to the demand for those engaged in other professions or skilled occupations. The temporary scarcity is rapidly disappearing with the return of medical officers to civilian life. That the number of physicians is still fully ample to meet the needs of the country is shown by the fact that there is one physician to every 720 people throughout the United States (compare Table 14, p. 513). That there is a need of physicians in certain rural districts is a problem which will not be met by lowering the standards of medical education—this need has always existed and always will, unless physicians under government employ are assigned to those districts. There is also need of better health officers and better medical skill and advice, but to meet these needs, not greater numbers but better qualified physicians are required.

FURTHER IMPROVEMENTS NEEDED IN MEDICAL EDUCATION

Notwithstanding the great progress in medical education, the world war has emphasized the need of still further improvement. In the immediate future, medical colleges should establish closer relations with teaching hospitals, should secure greater abundance of teaching material and, more particularly, should reorganize their clinical faculties and adopt greatly improved methods of clinical instruction. It is the clinical side which needs most consideration.

The achievements of the past fifteen years seem insignificant when one considers the possibilities for further development in both undergraduate and graduate medical instruction, and the great advances possible in medical research and in public health and disease prevention. The next decade holds promise of great progress in medical education.

BLOOD REGENERATION AND BONE MARROW ACTIVITY

Although the length of life of the red cells of the blood is still unknown, there is no doubt that they undergo disintegration sooner or later. Sometimes their destruction is hastened by disease; sometimes the erythrocytes are lost to the body through hemorrhage. It becomes important at times, therefore, to learn to what extent reparative processes are taking place and whether red cells are being returned to the circulation. Microscopic examination of the blood during rapid regeneration of the erythrocytes reveals the presence of nucleated forms. Nucleated red cells have therefore been taken as "an inevitable feature of rapid blood regeneration." As Macleod[1] has pointed out, however, changes in the mode of red blood cell formation may be responsible for the nucleated forms.

Some time ago Warburg[2] demonstrated that whereas normal human blood consumes very little oxygen, blood such as that of birds, which contains nucleated erythrocytes, may evince a high oxygen absorption. Morawitz[3] has observed, however, that even in mammals blood obtained during the regeneration following an anemia may show an absorption of oxygen that cannot be accounted for by nucleated cells or by substances possibly dissolved in the plasma. The explanation seems now to have been furnished by Harrop[4] of the Medical Clinic at the Johns Hopkins Hospital, Baltimore. Starting with the assumption that the red cells in the blood which appear reticulated after certain methods of histologic staining are "youthful erythrocytes," Harrop has found that blood which contains abnormal numbers of them has an oxygen absorption proportional to the percentage of reticulated cells present. These two factors are interdependent; according to Harrop, both are due to the presence of abnormal numbers of youthful cells and both are probably rather accurate indicators of functional regeneration in the bone marrow and of the amount of blood regeneration. According to this latest American research, normal mature human erythrocytes have no oxygen consumption measurable by present methods. Furthermore, when it is measurably increased in the blood of individuals with anemia, the oxygen consumption has no direct relation to the severity of this symptom, and no constant relation to histologic abnormalities in the erythrocytes other than increases in the number of reticulated cells. A large proportion of all the nonnucleated red blood cells in the bone marrow are reticulated. Accordingly, the increase in the number of these forms, along with increase in the hemoglobin of the blood and a greater oxygen consumption thereby, is indicative of increased activity of the bone marrow.

1. Macleod, J. J. R.: Physiology and Biochemistry in Modern Medicine, St. Louis, C. V. Mosby Company, 1918, p. 93.
2. Warburg, O.: Ztschr. f. physiol. Chem. **59**: 112, 1909.
3. Morawitz, P.: Arch. f. exper. Path. u. Pharmakol. **60**: 298, 1909; Ergebn. d. inn. Med. u. Kinderh. **11**: 277, 1913
4. Harrop, G. A., Jr.: The Oxygen Consumption of Human Erythrocytes, Arch. Int. Med. **23**: 745 (June) 1919.

EMIL FISCHER

In his biographic study of "Great Men," Ostwald divides scientists into the classical and the romantic types. To the former belong such men as Helmholtz and Faraday, who were characterized in their work by steadily advancing from one firm base to another in logical, systematic manner. Pasteur may perhaps be regarded as a most striking representative of the romantic type, which advances suddenly at the call of visions to brilliant success or, more often, except in the case of the most gifted, to dismal failure. Emil Fischer, whose death we recorded two weeks ago, was distinctly of the classical type. His achievements, while exceedingly brilliant, were in every instance the outcome of work systematically planned and developed, following step by step logical processes to an anticipated conclusion. Rarely, if ever, has any scientist accomplished a series of great tasks with so few deviations from the straight road toward each goal sought. Starting out early in his career (for he became a professor in the University of Munich at the early age of 27) on a campaign against three of the most difficult and most important problems of organic chemistry, he lived to succeed in solving each of them in a manner that leaves no doubt of the permanence of his achievements. Fortunately for medicine, each of these problems was of fundamental importance for biologic chemistry. They were: first, the structure of the purins; second, the structure of the carbohydrates, and third, the nature of the protein molecule. The accomplishment of any one of these tasks would have made Emil Fischer one of the greatest living chemists; but alone he solved all three.

There was nothing sensational or spectacular about these advances, as each came in logical order, built up step by step by rational development of existing knowledge and by sound reasoning. Skill in devising methods was the foundation stone of Fischer's success, coupled with a sound logic and great capacity for analytic reasoning. Working first with the hydrazins and related compounds, he developed methods that later were the key to his work with the sugars, and some features of his work on the compounds of phenylhydrazin with sugar are now familiar to every medical student, and are in daily use in biologic laboratories. This work, done chiefly in 1875 to 1877, was followed by brilliant studies on the rosanilin dyes, after which he turned to the purin work, the results of which were published especially between 1881 and 1895. Not only did these studies explain the structure of the purins, but they led to the development of methods for their synthesis, a matter of much practical importance in the case of such extensively used substances as caffein and theobromin. The work on the structure of carbohydrates was published mainly between 1883 and 1894, and resulted in explaining the composition and behavior of this vitally important group of substances, as well as furnishing methods of great practical value for their study and determination. As the producer of barbital and numerous other commonly used compounds, Emil Fischer's work came into especially close relation with medicine; but to physicians he is perhaps best known by his service in establishing the character of the protein molecule as nothing more mysterious or complex than a large aggregation of amino-acids united in a simple and uniform way. This work filled up most of the last twenty years of his life, and crowned his career in a gratifying manner. He was the recipient of about every honor possible for a great scientist, including the Nobel prize in 1902. In his laboratory many American students have worked, and he had always a keen interest in America and American affairs. Although he was one of the numerous German professors who signed the famous declaration, after the armistice he admitted to an American chemist that he had been deceived as to the statements on which this document was based, through his relying on the positive statements made by the German chancellor — statements afterward proved to be false.

THE MEDICAL STUDENT AND THE DEPARTMENT OF THERAPEUTICS

Times have changed since the day when two hundred students perched in an amphitheater to listen to a series of lectures on the uses of calomel or on the intricacies of incompatibles, both therapeutic and chemical, demanded by a complex polypharmacy. Pharmacology and physiology have demonstrated the absurdity of many of the products of ancient pharmacy, and have substituted reason and experiment for empiricism. Undoubtedly the teaching of today is better than that of two decades ago; but when we take stock of just how the system of today operates, and what its results are, the possibility of improvement is evident.

Elsewhere in this issue, Bastedo[1] points out some of the aims of the ideal course in therapeutics, and rightly lays stress on the selection of teachers from among the practicing physicians of the faculty who can think pharmacologically and physiologically; in other words, those detailed to teach should have acquired a knowledge of the physiologic processes which they propose to modify by therapy. It is equally important, however, that those who teach pharmacology in the pretherapeutic years should have as a background some knowledge of medicine as the prospective student will meet it in the clinical years of study which he is now preparing to enter. The recoil in methods of teaching therapeutics from ancient empiricism to the newer and better methods of demonstration in the pharmacologic laboratory has perhaps led in some schools to an unde-

1. Bastedo, W. A.: Suggestions for an Ideal Course in Therapeutics, The Journal, this issue, p. 463.

sirable detachment of thought of the pharmacologist from medicine as a whole. The students, unable to discriminate between essentials and nonessentials, are often sidetracked on lines of thought which, though of scientific interest, are given undue prominence to the exclusion of other more important pharmacologic subjects. The ideal teacher of pharmacology should have not only a medical degree but also a hospital internship or its equivalent in clinical experience. He will then be able to add the living clinical word to his demonstration of the action of digitalis on the frog's heart, which will fix the instruction in the mind of the student more permanently than hours of reading.

As Bastedo remarks, the teachers of physiology and pharmacology have a right to expect that the material of their teaching shall be utilized in the later years. But to be later utilized, this material must be so presented that it will be retained in the memory of the student. His thought is toward the coming clinical years; and a brief, well selected reference here and there which shows the relation of present theory to the future practice will help to fix the subject in his memory and to establish points of contact which, when touched later on in the clinical years, will recall to him the principles of function and therapy of the pharmacologic laboratory.

The plea of physiology and pharmacology for more of the student's time will no doubt meet resistance from other departments whose claims are perhaps as urgent; but there seems to be no question that the time now available can be more effectively utilized by those who have had personal experience in the problems the student will meet.

The betterment of therapeutic teaching of the clinical years will come largely as a part of the general improvement of clinical teaching. The ward walk, and instruction of small groups of students in ward clinics, afford opportunities for the teaching of therapeutics in conjunction with symptomatology and diagnosis; and on successive days the student sees the results of therapy on the patient. Necessarily much of this type of teaching is done by men who have graduated within ten years, and who are likely to have had the advantage of good physiologic and pharmacologic training. Their efforts, however, will fall short of ideal teaching without continued supervision. The small clinic and ward walk have added much to medical teaching, but at the same time have introduced individuality to a degree which sometimes borders on confusion. The machinery of a medical school, no matter how well devised, will not run unattended after being set going at the beginning of the year. Constant supervision by heads of departments, with frequent conferences with all instructors at which the subject matter of teaching, including therapeutics, is discussed, will aid in affording the student the type of instruction to which he is entitled.

Current Comment

PYLORIC SECRETION

Many years ago the Breslau physiologist Heidenhain devised an experimental method of securing specimens of uncontaminated secretion from various parts of the stomach while digestive processes were actually in progress. The technic consisted in isolating portions of the stomach wall as pouches opening through fistulas to the exterior where the juice could be collected. The classic observations made by the aid of this procedure have often been criticized on the ground that they are not strictly comparable with what goes on in the intact stomach, because Heidenhain's surgical method necessitated severance of the nervous connections of the isolated gastric pouches. The most striking finding of the earlier investigations[1] was that, in contrast with the acid juice secreted by the fundic portions of the stomach, the pyloric secretion is alkaline in character. Ivy[2] has reinvestigated this with the aid of animals having gastric pyloric pouches in which the nerves were still intact. The reported results show the pyloric secretion to be thick and viscid, clear in appearance, and very slightly alkaline in reaction. It has a small content of pepsin. According to Ivy's observations, further, the secretion is more or less continuous, showing no change in rate of flow after meals or the administration of secretory stimulants which are known to act on the peptic and pancreatic glands.

PLANS FOR GRADUATE MEDICAL INSTRUCTION IN THE UNITED STATES

The next great advance in medical education in the United States will be in connection with graduate medical instruction. This will require and mean a closer cooperation of hospitals, medical teaching institutions, laboratories, and public health and charity bureaus in each of our large cities. It means that the material available will be organized, skilled teachers selected and listed, courses arranged, ample finances secured and—most important—a central administrative office provided so that students can obtain the courses they want with the least difficulty and without waste of time. The statement in regard to the New York Association for Medical Education referred to on another page[3] will be of interest to all who are concerned in graduate medical work in this country. This association has a board of trustees on which there are representatives of hospitals, laboratories, and medical and postgraduate schools of that city. The commissioners of health and charity and the president of the Bellevue and allied hospitals are ex officio members of that board. Through this organization, all institutions useful in connection with medical education are to be united. A central administrative office has been established, the object being to develop and utilize to the utmost the clinical resources of that city for graduate

1. Heidenhain, R.: Arch. f. d. ges. Physiol. **18**, 1878.
2. Ivy, A. C.: Studies on the Secretion of the Pyloric end of the Stomach, Am. J. Physiol. **49**: 142 (June 1) 1919.
3. New York Association for Medical Education, Department of Medical Education and State Boards of Registration, this issue, p. 551.

medical teaching. A committee on finance is raising funds for immediate needs and planning for larger resources—fifty million dollars is the goal—for the further advancement of the work. A committee on education has in charge educational standards, qualifications of teachers, and the character of courses offered. The employment of a full-time executive secretary adds to the permanence of the movement. Instead of the many agencies acting individually as heretofore, the object sought is to have all cooperate toward securing the best possible results. The plan also contemplates a cordial and extensive cooperation with similar organizations in other countries. Such movements as this should result not only in the improvement of medical education but also in a material benefit to the public. A greater study will be given to the etiology, diagnosis and treatment of individual patients; a greater enthusiasm will result from cooperation; an increased interest in investigation will be developed in all hospitals and on the part of both teachers and students; a greater opportunity for graduate medical study will be within easy reach of American physicians, and the greater knowledge and skill which they obtain will result in a better care of their patients. Furthermore, and not of the least importance, is the very definite fact that, instead of American physicians going to Europe for their postgraduate work, Europeans and South Americans will be coming to the United States.

ILLINOIS' COMMENDABLE CONSOLIDATION OF MEDICAL CHARITIES WITH MEDICAL EDUCATION

When the Illinois Consolidation Law was passed, two years ago, it placed the work of 125 state commissions under nine administrative departments. Under one of the nine, the Department of Public Welfare, were placed the hospitals, charitable and penal institutions of the state, and the department was instructed to conduct research into the causes and treatment of insanity, feeblemindedness, delinquency, dependency and crime as well as to train physicians, nurses and others for the special work of the department. Its duties, however, were administrative and not educational. To carry out its function, therefore, it was necessary for the department to establish a relationship with some medical teaching institution. As noted on another page,[1] a perpetual agreement was established with another creature of the state, the University of Illinois and its college of medicine. Under this agreement the Department of Public Welfare will secure land and construct buildings for a psychiatric institute, a surgical institute for children, a new eye and ear infirmary, a clinical laboratory, a reconstruction hospital, a contagious disease hospital, a medical school, and other buildings as may be needed. By its approval of this agreement, the Illinois legislature has committed itself to a plan requiring eventually the expenditure of several million dollars. Already it is stated that $1,500,000 has been appropriated. The old Cubs' ball park just south of the Cook County Hospital has been secured, and the erection of buildings will be begun at the earliest opportune time. It is intended that these buildings shall be educational in character rather than of the institutional type. This agreement with the University of Illinois College of Medicine will unite with the latter a group of teaching institutions providing almost every kind of clinical material and in any quantity. It will have, therefore, exceptional facilities for medical teaching and research. At the same time the Department of Public Welfare will be fulfilling its obligations to the public by securing through the medical school a corps of trained specialists for the various hospitals and institutions which are, or will be, under its administration.

1. This issue, p. 549.

THE PRESERVATION OF ANTISCORBUTIC FRUIT JUICES

The sensitiveness of the antiscorbutic property of fresh fruits and vegetables toward heat and such methods of food conservation as depend on the use of this agency has been referred to in some detail in THE JOURNAL.[1] It was pointed out that experiments conducted in London give some promise of success in the preservation of the highly valued antiscorbutic fruit juices which have been relied on more than any other food product in the past to prevent scurvy in infants fed on heated milk or special foods, and also in the members of ships' crews or others likely to be kept out of reach of fresh foods for considerable periods. Further substantiation of the development of satisfactory methods of preservation of orange juice has just been recorded in this country by Givens and McClugage[2] at the University of Rochester. If the process of drying is not conducted at an unduly high temperature and the duration of drying is very short, the desiccated orange juice retains a significant amount of antiscorbutic potency. The latter is diminished as soon as the temperature is raised and the heating prolonged; thus, a temperature of from 55 to 60 C. (131 to 140 F.) for forty hours or more is destructive to the antiscorbutic property. Givens and McClugage, recognizing the need of an antiscorbutic that shall be within the reach of the poorer classes, point out that by desiccation of orange juice it should be possible to save a large amount of fruit product hitherto wasted through the inability to market and sell oranges at the moment that they are ready for sale.

1. Antiscorbutics I, editorial, J. A. M. A. **73**: 271 (July 26) 1919; Antiscorbutics II, ibid. **73**: 338 (Aug. 2) 1919.
2. Givens, M. H., and McClugage, H. B.: The Antiscorbutic Property of Fruits, I, An Experimental Study of Dried Orange Juice, Am. J. Dis. Child. **18**: 30 (July) 1919.

Statistics on Insanity.—On Jan. 1, 1918, there were 239,820 insane patients under treatment in institutions in the United States. Of these, 231,048 were in public institutions, and 8,772 in private hospitals. Compared with the census of Jan. 1, 1917, there was an increase during the year of 6,406 patients in the public institutions and of 541 in the private, a total increase of 6,947. Of the 231,048 patients in public institutions, 207,705 were cared for in state hospitals; 22,443 in county or city institutions, and 900 in institutions for temporary care. The increases during the year in these hospitals were 5,681 and 139, respectively.—*State Hospital Quarterly*, Utica, N. Y., May, 1919.

Medical Mobilization and the War

Personnel of the Medical Department

For the week ending August 8, there were 9,661 officers in the Medical Corps, a decrease of 770 from the previous week. The Medical Reserve Corps contained 3,117 officers. The total number of physicians discharged since the beginning of the war is 23,214.

Confirmation of Promotions of Colonels Noble and McCaw

The United States Senate has confirmed the nominations of Col. Walter D. McCaw and Lieut.-Col. Robert E. Noble to be brigadier-generals in the Medical Corps of the United States Army and to serve as assistant surgeon-generals. General McCaw entered the army as an assistant surgeon, Aug. 20, 1884, appointed from the state of Virginia. He holds medical degrees from the Medical College of Virginia and from Columbia University. He was awarded the distinguished service medal for his work in France. He is 59 years old. General Noble entered the service, June 29, 1901, appointed from Alabama. He was graduated from the Alabama Polytechnic Institute, Columbia University and the Army Medical School. He is 49 years old.

New Head for Department of Physical Reconstruction

Major Horace M. Evans, M. C., U. S. Army, has been appointed officer in charge of the section of physical reconstruction in the hospital division, succeeding Col. Frank Billings. The Surgeon-General has also directed the appointment of chiefs of sections of physical reconstruction in the various Army hospitals doing such work. These officers will have charge of all hospital activities pertaining to physical reconstruction of disabled soldiers, acting under the commanding officer with the medical and surgical services.

Medical Supplies for Red Cross

Senator James W. Wadsworth, Jr., chairman of the Senate Military Committee, has introduced a joint resolution to authorize the Medical Department of the Army to turn over to the American Red Cross all surplus medical supplies in France, to relieve the needs of the people of Europe for medical supplies.

Promotion of Dr. Bainbridge to Commander in the Naval Medical Corps

Dr. William Seaman Bainbridge, at present chief of the surgical division of the new 1,200 bed Naval Hospital at Ward's Island, N. Y., and consulting surgeon to the Third Naval District, has been promoted to the rank of commander in class 4, approved July 23. We are informed that this is the first time in the history of the Navy that an official of the reserve force has been promoted to this rank.

HONORABLE DISCHARGES, MEDICAL CORPS, U. S. ARMY

NOTE.—In the following list, L. signifies lieutenant; C., captain; M., major; L. C., lieutenant-colonel; Col., colonel.

ALABAMA

Akron—Wiates, W. L. (C.)
Bass Station—Rosser, W. W. (M.)
Birmingham—Faris, W. E. (C.)
Senteff, L. H. (L.)
Cullman—Thurlow, A. A. (L.)
Fitzpatrick—Griswold, J. C. (C.)
Mobile—Forcheimer, H. H. (C.)
Troy—Beard, J. W. (C.)
Valley Head—Norton, E. M. (L.)

ARIZONA

Nogale—Smelker, V. A. (M.)
Verde—Judd, W. C. (L.)

ARKANSAS

Batesville—Johnston, O. J. T. (C.)
Bentonville—Huffman, K. B. (C.)
Clinton—Hunter, R. M. (C.)
Earl—Watson, H. S. (C.)
Green Forest—Poynor, E. E. (C.)
Hamburg—Simpson, J. C. (L.)

CALIFORNIA

Brea—Davis, W. W. (L.)
Exeter—Mix, P. A. (C.)
Fresno—Pomeroy, F. K. (L.)
Glendale—Bardill, J. W. (C.)
Los Angeles—Bartow, W. L. (C.)
Los Cruces—Phillips, O. S. (C.)
Norwalk—Kellogg, P. S. (M.)
Oakland—Devine, C. T. (C.)
Purcell, E. M. (L.)
Pasadena—Griffith, H. M. (C.)
Sacramento—Briggs, G. A. (L.)
San Francisco—Bloch, H. I. (L.)
Boskowitz, G. H. (C.)
Cass, D. (L.)
Hawkins, H. M. (C.)
Hoffman, L. H. (M.)
Hopkins, E. K. (C.)
Krout, B. M. (C.)
Robinson, J. W. (C.)
Roncoviere, L. D. (C.)
Santa Monica—Balsley, J. A. (C.)
Stockton—Johnson, L. R. (C.)

COLORADO

Blackhawk—Froid, C. M. (L.)
Denver—Beaghler, A. L. (C.)
Carpenter, F. H. (L.)
Lyons, O. (M.)
Macomber, H. G. (L.)
Durango—Hutchinson, A. F. (C.)
Fort Collins—Rew, A. W. (C.)
Hotchkiss—Copeland, W. C. (M.)
Longmont—McFarland, S. B. (C.)
Strong—Durnell, A. (C.)

CONNECTICUT

Bridgeport—Dixon, H. C. (L.)
Olsson, E. E. (L.)
Danbury—Stahl, W. M. (L.)
Greenwich—Hyde, F. C. (M.)
Hartford—Biram, J. H. (L.)
New London—Acker, G. N. (C.)

DELAWARE

Seaford—Allen, B. M. (C.)
Wilmington—Burns, I. (C.)

DISTRICT OF COLUMBIA

Washington—Carr, W. B. (L.)
Kotz, J. (L.)
Luce, C. R. (L. C.)
MacNamee, A. M. (C.)
McKay, J. G. (L. C.)
Townshend, G. D. (L.)

FLORIDA

Bronson—McLeod, R. F. (L.)
Century—Gachet, N. L. (L.)
Jacksonville—Jelks, E. (C.)
Rothrock, A. M. (C.)
Myakka City—Maura, F. R. (M.)
Pensacola—Bryans, H. L. (C.)
Tarpon Springs—Vinson, W. J. (C.)

GEORGIA

Arabi—Miller, W. A. (M.)
Atlanta—Armstrong, T. B. (L.)
Beech, T. R. (L.)
Shanks, E. D. (C.)
Bainbridge—Willis, L. W. (L.)
Bronwood—Bowman, R. E. (L.)
Butler—Montgomery, R. C. (C.)
Canon—Terrell, J. H., Jr. (L.)
Cartersville—Wofford, W. E. (C.)
Demorest—Lamb, R. B. (C.)
Douglas—Smith, J. R. (C.)
Dublin—Page, L. J. (L.)
Fort Valley—Smisson, R. C. (L.)
Gay—Ellis, W. P. (C.)
Jeffersonville—Ray, S. W. (C.)
Kingsland—Prince, A. B. (C.)
Lithonia—Almand, C. A. (L.)
Macon—Corn, E. (L.)
Milledgeville—Pettit, J. K. (L.)
Monticello—Williams, W. A. (C.)
Warrenton—Davis, A. W. (L.)
Waycross—Lane, P. P. (L.)

IDAHO

Bellevue—Byrd, A. G. (L.)
Gooding—Cromwell, J. H. (C.)
Paris—Arntzen, J. L. (C.)
Pocatello—Richards, F. P. (C.)
Post Falls—Prichard, J. R. (C.)
Priest River—Ingram, J. W. (M.)
Twin Falls—Alexander, D. L. (C.)

ILLINOIS

Akin—Reed, J. E. (L.)
Aledo—Moore, G. H. (C.)
Aurora—Thomas, E. M. (L.)
Brownfield—Field, L. M. (C.)
Carrolton—Black, J. M. (L.)
Carthage—Knight, L. C. (L.)
Centralia—Kissel, J. P. (C.)
Chicago—Allen, T. D. (L.)
Allen, T. G. (L.)
Anderson, F. A. (L.)
Bacon, C. M. (L.)
Barnett, I. F. (C.)
Bassler, H. H. (C.)
Bedessem, P. M. (C.)
Bettman, R. B. (C.)
Beveridge, T. F. (C.)
Blech, G. M. (L. C.)
Blomgren, W. L. (C.)
Bresnahan, J. F. (C.)
Clark, E. (M.)
Clark, F. M. (L.)
Clayton, H. C. (L.)
Cleff, O. (C.)
Davenport, G. L. (C.)
Eck, C. P. (C.)
Gaarde, F. W. (M.)
Gaff, J. H. (L.)
Hansen, A. R. (C.)
Hauber, A. H. (L.)
Haug, L. A. (L.)
Helwig, A. G. (C.)
Hottinger, E. S. (C.)
Jenkinson, E. L. (C.)
Kispert, R. W. (L.)
Larkin, W. R. (C.)
Like, O. (C.)
Lippman, L. H. (C.)
Chicago—Machler, F. P. (C.)
Magee, I. J. (C.)
Martin, F. H. (Col.)
Mohr, W. C. (L.)
Pellettieri, J. (L.)
Pratt, R. W. (C.)
Riley, W. J. (L.)
Rubovits, W. H. (C.)
Segall, I. S. (L.)
Shambaugh, G. E. (M.)
Steele, P. A. (L.)
Stone, F. L. (C.)
Stranberg, W. L. (C.)
Torell, G. J. (L.)
Volini, I. F. (L.)
Warszewski, E. H. (L.)
Walman, N. (L.)
Chicago Heights—Fenn, G. K. (L.)
Decatur—Taylor, C. M. (L.)
East Moline—Randolph, H. E. (L.)
East St. Louis—Bernard, L. J. (L.)
Elkhart—Woodward, J. T. (C.)
Evanston—Nushaun, P. L. (M.)
Roler, A. H. (L. C.)
Forrest—Evans, G. S. (C.)
Galena—Logan, R. E. (L.)
Geneva—Allen, J. S. (L. C.)
Harrisburg—Fuson, C. M. (C.)
Hazel Dell—Thomas, G. B. (C.)
Henry—Coggshall, T. C. (C.)
Herrin—Baker, L. W. (C.)
Jerseyville—Hunt, A. S. (C.)
Joliet—Fletcher, W. R. (L.)
Talbot, E. R. (C.)
Kankakee—Lockwood, C. R. (C.)
La Salle—Burke, E. J. (L.)
Lawrenceville—Montgomery, K. E. (L.)
Marietta—Jeffries, D. W. (C.)
Melrose Park—Short, R. D. (L.)
Minier—Rost, J. F. W. (L.)
Moline—Kohler, A. E. (C.)
Murphysboro—Sabine, R. S. (C.)
New Athens—Joseph, R. J. (C.)
New Berlin—Maxwell, T. R. (L.)
Normal—Wallis, M. (M.)
North Chicago—Mieczynski, J. F. (L.)
Oak Forest—Schlesinger, J. (L.)
Oblong—Wilson, C. S. (M.)
Ottawa—Edgcomb, J. H. (L.)
Paris—Williams, B. G. R. (L.)
Peoria—Cook, W. C. (C.)
Plainville—Aleshire, J. L. (C.)
Pontiac—Dargan, C. M. (M.)
Quincy—Stimpson, G. C. (L.)
Robinson—Davis, C. L. (C.)
Rockford—Sullivan, H. A. (L.)
Rock Island—Ostrom, L. (C.)
Rushville—Schenk, M. C. (C.)
Sandova'—Ruddick, H. C. (C.)
South Wilmington—Wright, L. G. (L.)
Springfield—Aschauer, A. G. (C.)
Cole, H. H. (C.)
White, E. C. (C.)
Streator—Clark, J. E. (C.)
Powers, G. J. (C.)
Tampico—Horn, A. S. (C.)
Washington—Bennett, O. P. (M.)
West Frankfort—Peterson, A. A. (L.)

INDIANA

Anderson—Miley, W. M. (C.)
Tracy, J. R. (C.)
Attica—Bechett, C. G. (M.)
Auburn—Hines, A. V. (C.)
Aurora—Ullrich, A. J. (C.)
Bedford—Norman, O. B. (M.)
Brazil—Elliott, H. (C.)
Decatur—Hoffmann, S. P. (C.)
Fort Wayne—Catlett, M. B. (C.)
Garrett—Thomson, J. W. (C.)
Greenfield—Brown, K. T. (M.)
Hayden—Cramm, G. W. (L.)
Hobart—Mackey, D. (L.)
Indiana Harbor—McGuire, D. F. (C.)
Indianapolis—Beler, R. C. (C.)
Brauchla, H. C. (L.)
Emhardt, J. W. (M.)
Funkhouser, E. (C.)
Habich, C. (L.)
McGaughey, S. (C.)
Moore, R. M. (C.)
Storms, R. B. (C.)
Kokomo—Bennett, E. N. (L.)
Everman O. (C.)
Mecca—Swayne, J. F. (C.)
Monrovia—Grave, E. F. (C.)
Montpelier—Emshwiller, M. A. (C.)
Muncie—Glascock, F. L. (L.)
Newport—Casebeer, I. M. (C.)
New Salem—Metcalf, H. C. (L.)
Portland—Hiatt, E. R. (C.)
Richmond—Churchell, E. R. (M.)
Rockville—Bloomer, J. R. (C.)
South Bend—Wilson, J. L. (L.)
Tipton—Reagan, L. M. (C.)

Valparaiso—Weldy, C. (C.)
Washington—Banister, R. F. (C.)
Wayne—Ditton, I. W. (C.)
Whiting—Ballard, C. A. (C.)
Mackey, C. G. (L.)

IOWA

Blackburg—Selman, R. J. (C.)
Buffalo—Frank, G. W. (C.)
Cedar Rapids—Riggle, F. P. (L.)
Centerville—Lowrey, C. E. (L.)
Cherokee—Wescott, L. A. (C.)
Des Moines—Dilley, H. H. (L.)
Fagan, R. P. (L. C.)
McKinley, A. D. (C.)
Dubuque—McGuire, C. A. (C.)
Parker, H. C. (M.)
Fort Des Moines—Loosbrock, J. F. (M.)
Iowa City—Gittens, T. R. (C.)
Gregg, J. B. (C.)
Jenkinson, H. R. (L.)
Mechanicsville—Priessman, F. A. (C.)
Monona—Brownson, J. D. (C.)
Montezuma—Cullison, R. M. (L.)
Mount Vernon—Mills, H. R. (C.)
Muscatine—Fruth, H. E. (C.)
Ottumwa—Newell, W. C. (C.)
Perry—McKirahan, J. R. (M.)
Rockwell—Guthrie, J. K. (C.)
Meany, J. F. (L.)
Rose Hill—Carver, H. E. (C.)
Shenendoah—Weaver, J. O. (L.)
Sioux City—Frear, C. E. (C.)
Hendrickson, A. H. (C.)
Maxwell, C. T. (C.)
Trierneiler, J. F. (L.)
Strawberry Point—Howard, W. H. (C.)
Varina—Creane, J. C. (L.)
Waterloo—McConnell, G. (M.)
Waverly—Gernsey, M. N. (L.)
Williams—Carey, F. S. (C.)

KANSAS

Beloit—Pickler, R. S. (C.)
Dresden—Funk, F. R. (C.)
Horton—Poutre, F. G. (L.)
Kansas City—Hobson, G. H. (C.)
King, H. W. (L.)
Lancaster—Charles, H. L. (C.)
Lenexa—Allen, L. G. (L.)
Lucas—Miller, E. A. (L.)
Manchester—Jackson, D. O. (C.)
Medicine Lodge—Coleman, T. A. (C.)
Pittsburg—Updegrove, W. H. (L.)
Pretty Prairie—Springer, R. W. (L.)
Scandia—Ward, R. C. (L.)
Topeka—Allen, G. V. (L.)
Erickson, O. L. (C.)
Tyro—Chadwick, I. B. (C.)
Wichita—Mitchell, W. I. (M.)
Rea, J. G. (L.)

KENTUCKY

Busseyville—Bussey, J. C. (C.)
Covington—Cohen, S. D. (L.)
Earlington—Sisk, A. O. (M.)
Finchville—Nash, W. H. (L.)
Franklin—Guthrie, S. R. (C.)
Hazard—Collins, R. L. (C.)
Horse Cave—Honaker, H. P. (C.)
Lancaster—Kinnaird, V. G. (M.)
Lexington—Willmott, C. B. (L.)
Louisville—Boulware, J. P. (C.)
Burns, C. C. (L.)
Floyd, J. B. (L.)
Lynnville—Ellis, N. B. (C.)
Midway—Anderson, S. J. (C.)
Newport—Backsman, E. B. (C.)
Paint Lick—Carman, W. L. (L. C.)
Strode—Palmore, E. E. (M.)
Symsonia—Smith, E. E. (L.)
Wallins Creek—Howard, W. P. K. (L.)
Winchester—Browne, I. H. (L.)
Bush, E. R. (C.)

LOUISIANA

Abbeville—Edwards, H. G. F. (C.)
Carson—Callihan, P. W. (L.)
Fullerton—Talbot, M. W. (L.)
Kenner—Reeves, E. W. (L.)
Mansfield—Cooper, A. S. (C.)
New Orleans—Bird, T. B. (C.)
Blakely, R. M. (C.)
Brown, F. T. (M.)
Humphries, S. R. (C.)
Levy, L. H. (C.)
Mayer, G. A. (L.)
Nicolle, H. T. (M.)
Werlein, P. E. (L.)
Shreveport—Hunter, W. B. (C.)
Slicer, J. E. (L.)
Waterproof—Gorton, J. M. (C.)

MAINE

Bangor—Scribner, H. C. (C.)
Brewer—Thomas, C. M. (M.)
Caribou—Blossom, F. O. (L.)
Houlton—Potter, J. G. (C.)
Mapleton—Floyd, A. E. (C.)
Portland—Haskell, A. W. (C.)
South Portland—Jordan, F. H. (M.)
Springfield—Glynn, R. R. (M.)
Waterville—Hill, F. T. (L.)

MARYLAND

Baltimore—Burns, J. E. (L. C.)
Clift, J. W. V. (C.)
Cudd, J. E. (L.)
Detrick, F. L. (L.)
Foster, H. M. (C.)
Hedrick, E. H. (L.)
Reinhardt, G. H. (C.)
Sanger, B. J. (L.)
Streett, ... H. (L.)
Wynne, H. M. N. (C.)
Magnolia—Shohl, A. T. (C.)
Oakland—Darby, J. D. (L.)
Woodsboro—Kable, W. H. (L.)

MASSACHUSETTS

Amesbury—Wright, A. C. (L.)
Boston—Batchelder, H. G. (C.)
Emmons, H. M. (C.)
Foster, J. H. (L.)
French, E. H. (C.)
Goffin, J. L. C. (L.)
Goulding, T. F. (L. C.)
Grandison, L. J. (C.)
Hardy, W. C. (C.)
Kendall, M. R. (C.)
Morris, S. L., Jr. (C.)
Osborn, S. H. (L.)
St. Antoine, H. E. (L.)
Stoddard, J. K. (L.)
Vose, R. H. (M.)
Brockton—McCann, C. D. (C.)
Cambridge—White, G. A. (L.)
Wiggin, R. C. (C.)
Chicopee—Foley, J. D. (C.)
Fall River—Barnes, F. R. (C.)
MacKnight, R. P. (C.)
Haverhill—Coffin, F. H. (C.)
Lynn—Merrill, E. A. (L.)
New Bedford—Mahoney, J. F. (C.)
Northampton—Janes, B. F. (C.)
Orange—Alexander, K. L. (C.)
Pittsfield—Lally, W. J. (C.)
Springfield—Horrigan, A. J. (C.)
Sunderland—Moline, C. (C.)
Taunton—Murphy, J. L. (C.)
Waltham—Dennen, R. W. (C.)
Wellesley Hills—Stanwood, F. A. (M.)
Worcester—Albee, G. M. (C.)
Calwell, H. S. (M.)
Lazarus, L. (L.)
Quist, F. J. (L.)
Schofield, R. W. (C.)

MICHIGAN

Alma—McNabb, A. A. (L.)
Ann Arbor—Criswell, R. H. (C.)
Denney, R. W. (C.)
Searles, W. I. (L.)
Battle Creek—Stone, R. C. (C.)
Tower, L. H. (L.)
Bear Lake—Norconk, W. H. (L.)
Benton Harbor—Becker, M. G., Jr. (C.)
Mitchell, C. A. (M.)
Big Rapids—Yeo, G. H. (L.)
Brooklyn—Schepeler, C. W. (C.)
Channing—Hayes, R. E. (M.)
Detroit—Boyes, H. R. (C.)
Donovan, D. R. (C.)
Goldstone, R. R. (C.)
Haden, R. L. (L.)
Henderson, H. (L.)
Kaminski, Z. L. (C.)
Sewell, G. S. (L.)
Smith, C. V. (C.)
Sutherland, A. P. (L.)
Yoh, H. B. (C.)
Escanaba—Defnet, H. J. (C.)
Ryan, V. F. (L.)
Walch, J. J. (L.)
Flint—Pratt, G. K. (C.)
Lansing—Cushman, M. L. (C.)
Holm, M. L. (C.)
Mount Clemens—Ullrich, R. W. (C.)
Negaunee—Abrahamson, I. L. (C.)
Ypsilanti—Rexford, W. K. (C.)

MINNESOTA

Albert Lea—Rudolf, S. F. (C.)
Barnesville—Cyr, A. (C.)
Glencoe—Wheeler, M. W. (C.)
Hallock—Wood, J. R. (L.)
Hector—McKibben, H. E. (L.)
Mankato—Denman, A. V. (L.)
Middle River—Spinks, R. E. (C.)
Minneapolis—Goss, H. L. (C.)
Grempler, W. E. (L.)
Hansen, E. W. (C.)
Luehrs, L. E. (L.)
Lynch, M. J. (C.)
Nordin, G. T. (L.)
New Prague—Maertz, W. F. (C.)
Osakis—Hengstler, W. H. (M.)
Owatonna—Andrist, J. W. (C.)
Pipestone—Schmidt, G. F. (M.)
Rochester—Bacon, K. (C.)
Lowell, H. M. (C.)
St. Paul—Brodie, W. D. (M.)
Dunn, J. N. (C.)
Ghent, M. M. (C.)
Turnacliff, D. D. (L.)
Thief River Falls—Douglass, J. E. (C.)
Warren—Borreson, B. (L.)
Waseca—Lynn, J. F. (C.)
Wells—Anderson, S. H. (C.)
Wheaton—Bates, B. V. (C.)

MISSISSIPPI

Bay St. Louis—Rush, B. C. (C.)
Bethany—Waldrop, H. G. (L.)
Bond—Hood, B. S. (L.)
Columbus—Ervin, W. L. (C.)
Dockery—Farmer, E. E. (L.)
Eastman—Graham, A. T. (L.)
Gulfport—Parker, E. C. (C.)
Meridian—Cleveland, T. G. (C.)
Strain, T. A. (C.)
Midnight—James, W. A. D. (C.)
New Albany—Boswell, H. P. (C.)
Plattsburg—Slaughter, J. H. (C.)
Wood, S. H. (C.)
Ratliff—Burns, E. P. (C.)
Rhodes—Slay, I. J. (L.)
Sanford—Fridge, H. G. (L.)
Sweetwater—McGahey, F. L. (C.)
Tippo—Friday, W. C. (L.)
Wayside—Russell, F. H. (C.)

MISSOURI

Ash Grove—McHaffie, C. H. (C.)
Orr, C. H. (L.)
Ballwin—Koch, O. W. (M.)
Brumley—Thompson, P. (C.)
Carrollton—Atwood, W. G. (L.)
Centerville—Ralls, L. B. (C.)
Elvins—Whiteside, E. E. (C.)
Fredericktown—Slaughter, S. C. (L.)
Gallatin—Smith, M. A. (C.)
Goodwater—Ramming, H. (L.)
Independence—Twyman, G. T. (C.)
Kansas City—Callaghan, R. (L.)
Connell, E. S. (C.)
Culbertson, W. F. (C.)
Hoagland, W. L. (C.)
Horigan, J. A. (C.)
Kearney—Milligan, R. H. (L.)
Knox City—McReynolds, R. (C.)
Lathrop—Schoenfeld, O. E. (L.)
New Hartford—Gay, R. J. (L.)
Oakridge—Statler, W. K. (C.)
Popular Bluff—Knecht, L. B. (L.)
Princeton—Mullinax, C. E. (C.)
Rutledge—Petty, W. S. (C.)
Saline—Wilkin, T. J. (L.)
Springfield—Wills, W. J. (C.)
St. Joseph—Forgrave, L. P. (C.)
St. Louis—Baker, E. (L.)
Calhoun, J. G. (C.)
Campbell, O. H. (L. C.)
Cleveland, H. F. (C.)
Clithers, W. H. (L.)
Cooper, T. E. (C.)
Gordon, F. N. (M.)
Joseph, D. R. (M.)
Larimore, J. W. (C.)
Leggat, A. C. (M.)
McCarthy, E. F. (L.)
Mellies, G. A. (C.)
Redington, J. C. (L.)
Reim, W. H. (L.)
Riley, G. L. (L.)
Rossen, J. A. (L.)
Schmalhorst, D. E. (C.)
Senseney, E. T. (C.)
Shepherd, H. A. (L.)
Westerman, C. M. (C.)
Wichman, A. G. (M.)
Warrensburg—Powers, J. A. (C.)

MONTANA

Anaconda—Dorland, M. A. (C.)
Butte—Brindjonc, E. F. (C.)
Kingsbury, W. V. (C.)
Great Falls—Dye, W. G. (C.)
Greer, E. J. (C.)
Putney, G. H. (C.)
Snyder, K. A. (L.)
Helena—Treacy, J. L. (C.)
Inverness—Reilly, F. S. (C.)
Missoula—Dodds, E. F. (C.)
Troy—Olson, J. W. (C.)
Warm Springs—Long, W. E. (C.)

NEBRASKA

Barada—Strong, J. F. (L.)
Blair—Brooks, E. B. (M.)
Blue Hill—Laird, C. R. (C.)
Elm Creek—Yoder, C. A. (C.)
Grand Island—Regan, J. H. (L.)
Hastings—Strate, L. K. (L.)
Sucha, W. L. (L.)
Lincoln—Flansburg, H. E. (L.)
Norfolk—Phillips, W. M. (C.)
Omaha—Akin, H. L. (M.)
Moore, J. C. (M.)
Stapleton, H. B. (L.)
Overton—Edwards, C. B. (L.)
Pawnee City—Waddell, J. C. (M.)
Randolph—Gleason, B. F. (L.)
Steinauer—Johnson, W. L. (C.)
Tekamah—Johnson, H. A. (M.)
West Point—Wells, H. L. (L.)

NEVADA

East Ely—Ashby, C. (C.)

NEW HAMPSHIRE

Concord—Amsden, H. H. (C.)
Nashua—Mulvanity, A. F. (L.)
Warner—Cogswell, L. H. (C.)

NEW JERSEY

Arlington—Lingle, C. P. (L.)
Atlantic City—Guion, E. (C.)
Sharpe, E. S. (M.)
East Orange—Buvinger, C. W. (M.)
Jersey City—Hirsch, R. (C.)
Maxon, C. B. (L.)
Perlberg, H. J. (L.)
Montclair—Dodd, S. W. (C.)
Morristown—Pinckney, F. H. (L.)
Newark—Reitter, G. S. (C.)
Weinstock, M. B. (L.)
Paterson—Donnelly, J. G. (L.)
Gillson, H. V. (C.)
Salem—Hilliard, W. T. (C.)
Skillman—McLain, M. M. (L.)
Trenton—Sands, J. P. (L.)
West Hoboken—Sacco, A. G. (C.)

NEW MEXICO

Dawson—Brady, F. (C.)
Elida—McGee, B. B. (C.)

NEW YORK

Albany—Brown, J. C. (C.)
Kellert, E. (L.)
Auburn—Kober, W. H., Jr. (C.)
Batavia—Gould, C. B. (C.)
Owen, E. E. (C.)
Beacon—Sharp, G. A. (C.)
Binghampton—Bloom, M. S. (L.)
Blackwells Island—Howard, J. C. (M.)
Brooklyn—Anderson, R. B. (M.)
Aronson, B. (L.)
Bersin, A. A. (L.)
Buswell, C. E. (C.)
DeCoste, S. H. (C.)
Dexter, T. H. (M.)
Garlick, R. H. (C.)
Goldfarb, L. (L.)
Gotlieb, A. L. (L.)
Hecht, S. (L.)
Heffter, O. H. (M.)
Howard, T. (M.)
Jacoff, M. (C.)
McGoldrick, J. L. (L.)
McNeile, H. J. (L.)
Pashman, D. (L.)
Sussman, H. A. (C.)
Buffalo—Dobbie, R. P. (L.)
Dooman, D. S. (L.)
Johnson, H. B. (C.)
Laduca, J. P. (L.)
Clinton—Hamlin, V. B. (C.)
Elmira—Mark, A. (C.)
Glens Falls—Lawler, F. J. (L.)
Palmer, F. (C.)
Hudson—Edwards, J. L. (C.)
Little Neck—Van Nostrand, H. S. (L.)
Mount Vernon—Wilson, M. J. (L.)
New Rochelle—Smith, C. A. (C.)
New York—Alexander, M. (L.)
Amoss, H. L. (M.)
Arnold, R. N. (L.)
Atkins, R. T. (M.)
Beard, R. W. (L.)
Berberovich, T. F. (C.)
Bibby, H. L. (M.)
Bidwell, A. M. (C.)
Blancard, W. (M.)
Blum, H. (L.)
Bradner, J. C. (C.)
Branower, J. (C.)
Cannaday, R. G. (C.)
Cartwright, H. T. (L.)
Chase, A. F. (M.)
Cleveland, M. (M.)
Craig, C. B. (M.)
Croce, J. P. (L.)
Davis, T. K. (C.)
Fitzgibbons, P. J. (L.)
Frasier, N. R. (L.)
Ginsburg, A. (C.)
Green, B., Jr. (C.)
Greenberg, I. (L.)
Healey, J. F. (L.)
Hyams, J. A. (L.)
Janes, H. H. (L.)
Johnson, O. H. (C.)

New York—Kupperman, M. (L.)
Levey, S. P. (L.)
Lincoln, A. L. (C.)
Liotta, M. A. (L.)
McDonald, R. F. (C.)
McDuffie, J. H., Jr. (L.)
McFarland, G. B. (C.)
McGlade, P. P. (L.)
McIntosh, R. (L.)
Osborne, L. J. (C.)
Ostrowsky, H. (L.)
Platt, M. W. (C.)
Pound, R. E. (M.)
Resnik, J. (L.)
Rock, J. W. (C.)
Rosenfeld, S. S. (L.)
Sachs, L. B. (C.)
Scholl, A. J., Jr. (C.)
Schultheis, D. (L.)
Strickler, F. P. (C.)
Sullivan, E. B. (C.)
Timm, A. B. (M.)
Touchstone, J. L. (L.)
Tyner, C. V. (L.)
Vander Veer, A., Jr. (M.)
Wallace, K. B. (C.)
Wood, W. B. (C.)
Zingher, A. (C.)
Palmyra—Pierce, L. R. (C.)
Penn Yan—Strait, B. S. (C.)
Rochester—Graham, C. T. (C.)
Miller, A. S. (C.)
Randall, H. (L.)
Schairer, W. W. (C.)
Steinhauser, C. G. (L.)
Salamanca—Ubel, G. B. (C.)
Salem—McSorley, F. W. (M.)
Schenectady—Stearns, W. A. (C.)
Witter, C. B. (C.)
Staten Island—Gilmore, G. B. (L.)
Syracuse—Doust, B. C. (C.)
Scott, R. C. (L.)
Troy—Buchanan, A. (M.)
Hogan, J. T. H. (C.)
Urlton—King, S. M. (C.)
Watertown—Barnett, M. D. (C.)
Waterville—Cole, L. F. (C.)
Wellsville—Eaton, R. M. (C.)
White Plains—Vosburgh, T. J. (L.)
Willard—Priestman, G. (C.)
Yonkers—Hoy, M. J. (C.)

NORTH CAROLINA

Asheville—Griffith, L. M. (C.)
Durham—King, M. N. (C.)
Speed, J. A. (C.)
Germanton—Petree, P. A. (L.)
Greensboro—Lipscomb, H. R. (L.)
Kingston—Mangum, C. P. (L.)
Raleigh—Mordecai, A. (C.)
Southport—Dosher, J. A. (C.)
Walkertown—Hurdle, S. W. (C.)
Williamston—Saunders, J. H. (C.)
Wilmington—Hooper, J. W. (C.)
Ruark, W. T. (L.)
Wingate—Williams, E. J. (L.)

NORTH DAKOTA

Ashley—Maercklein, E. H. (L.)
Bottineau—Scully, F. J. (L.)
Dickinson—Nachtway, A. P. (C.)
Enderlin—Cherry, W. S. (L.)
Minot—Jackman, J. C. (C.)
Valley City—Livingston, J. W. (M.)
White Earth—Kennedy, E. F. (L.)

OHIO

Arcadia—Taylor, E. B. (L.)
Bedford—Ralston, J. H. (L.)
Cardington — Moccabee, W. D. (L.)
Chagrin Falls—Wakefield, E. F. (C.)
Chatfield—Edwards, A. R. (C.)
Cincinnati—Applegate, M. M. (C.)
Ayres, W. M. (C.)
Baehr, E. M. (M.)
Greene, C. D. (C.)
Molony, L. A. (C.)
Schell, H. F. (C.)
Wenning, T. H. (C.)
Cleveland—Beekel, F. (L.)
Davis, C. V. (L.)
Dippel, A. L. (L.)
Marine, D. (L. C.)
Pilcher, J. D. (M.)
Richardson, M. L. (C.)
Sheets, L. G. (C.)
Sill, R. H. (C.)
Southwick, A. A. (L.)
Townsend, O. E. (L.)
Cleveland Heights—Garvin, J. A. (L.)
von den Steinen, E. (C.)
Columbus—Bausch, H. G. (L.)
Beatty, H. G. (L.)
Haney, F. C. (L.)
Ludwig, E. C. (M.)
Osborn, M. F. (C.)
Small, V. R. (C.)
Cuyahoga Falls — Caines, J. W. (L.)
Dayton—Austin, R. C. (C.)
Brower, A. B. (L.)
Prugh, M. D. (C.)
Elyria—Hubbell, W. B. (M.)
Montpelier—Steele, W. H. (L.)
New Berlin — Dougherty, J. B. (M.)
New Bremen—Havemann, G. A. (C.)
North Ridgeville — Pease, R. A. (C.)
Sonora—Loebell, M. A. (C.)
Toledo—Bowen, R. B. (C.)
McGonigle, M. B. (C.)
Mundy, C. S. (L.)
Walnut Creek—Bahler, C. T. (L.)
Zanesville—Rambo, H. M. (L.)

OKLAHOMA

Ada—King, R. F. (L.)
Chandler—Adams, J. E. (L.)
Checotah — Montgomery, A. B. (L.)
Cordell—Bungardt, A. H. (L.)
Idabel—Hill, L. H. (C.)
Ingersoll—Jones, E. L. (L.)
Lexington—Rock, J. L. (L.)
Marshall—Richmond, H. C. (L.)
Muskogee—Holcombe, R. N. (C.)
Okemah—Pemberton, J. M. (C.)
Oklahoma City—Hunter, G. (C.)
Langston, W. (C.)
Walker, O. J. (L.)
Owasso—Humphreys, D. W. (L.)
Quinlan—Eilers, P. G. (L.)
Sapulpa—Justice, H. B. (C.)
Shawnee—Wagner, H. A. (C.)
Strang—Leonard, J. D. (L.)
Stringtown—Rose, C. C. (L.)
Verden—McVey, G. M. (C.)
Vinita—Jackson, W. W. (C.)
Marks, W. R. (L.)
Wakita—Harrington, W. E. (M.)

OREGON

Coquille—Low, G. E. (C.)
Gresham—Hughes, H. H. (L.)
Prineville—Newsome, G. S. (L.)

PENNSYLVANIA

Allentown—Peterson, R. A. E. (C.)
Altoona—Bay, P. A. (L.)
Bloomhardt, F. H. (L. C.)
Hull, L. E. (C.)
Alverton—McNish, G. T. (C.)
Avoca—Druffner, L. C. (L.)
Burgettstown — Patterson, W. P. (C.)
Burnham—Thomas, L. I. (C.)
Byberry—Halprin, A. (C.)
Catasauqua—Baker, H. L. (L.)
Chambersburg—Maclay, J. P. (L.)
Chester—Evans, W. B. (C.)
Clarion—Fitzgerald, C. A. (L.)
Columbia—Miller, M. V. (C.)
Dillsburg—Crawford, W. L. (C.)
Dunmore—Carroll, F. A. (C.)
Eddystone—Armitage, G. L. (C.)
Elizabethville—Barto, R. E. (L.)
Erie—Miller, R. O. (C.)
Fountain Springs—Marsh, E. E. (C.)
Freeland—Dickinson, C. S. (C.)
Girardsville—Dewey, M. G. (C.)
Greensburg—Murdock, D. R. (C.)
Harrisburg—Reckford, F. F. D. (L.)
Honesdale—McConville, W. T. (C.)
Lansford—Bellas, J. J. (C.)
Mildred—O'Connor, J. J. (C.)
Mont Alto—Berry, J. (M.)
Makler, J. S. P. (C.)
Montgomery—Turner, W. E. (C.)
Mount Carmel — McNelis, T. J. (L.)
Mount Holly Springs—Fralic, H. B. (C.)
Philadelphia — Annesley, W. H. (C.)
Barron, C. A. (M.)
Baun, W. D. (L.)
Beltran, B. R. (C.)
Boyle, H. C. (C.)
Conlen, A. J. P. (L.)
Drayton, W., Jr. (C.)
Fox, H. (M.)
Hetherington, R. R. (C.)
Kennedy, J. P. (C.)
Kline, O. R. (L.)
Langton, D. J. (L.)
Loewenberg, S. A. (C.)
Longaker, E. P. (L.)
McMonagle, J. W. (C.)
Miller, R. L. (L.)
Morris, S. M. (C.)
Purves, G. M. (C.)
Ramsay, W. G. (L.)
Reading, J. H., Jr. (L.)
Philadelphia—Ruoff, W. (C.)
Thrush, M. C. (M.)
Vale, C. F. (L.)
Wells, J. R. (M.)
Zacks, M. A. (L.)
Pittsburgh—Bradford, C. L. (M.)
Campbell, R. J. (C.)
Carroll, T. B. (M.)
DeMuth, J. S. (C.)
Denslow, W. B. (C.)
Eber, S. I. (C.)
Evans, T., Jr. (C.)
Feldstein, G. J. (L.)
Glass, S. J., Jr. (L.)
Harmount, W. C. (C.)
Lacy, G. R. (C.)
Lindeman, C. E. (C.)
McCartney, J. S., Jr. (L.)
Moffitt, H. F. (L.)
Schubb, T. (L.)
Stewart, W. J. (C.)
Vaux, C. J. (Col.)
Scranton—Hanley, C. H. (L.)
Murrin, C. E. (L.)
Shaul, E. B. (L. C.)
Sharon—Hagin, E. N. (L.)
St. Michael — Dickinson, E. P. (L.)
Stewartstown—Free, E. M. (L.)
Swissvale—Caldwell, C. S. (C.)
Tamaqua—Harding, F. B. (C.)
United—Freas, M. W. (C.)
Vanderbilt—Hazlett, J. H. (C.)
West Chester—Woodnard, W. W. (L.)
Whitsett—Fosselman, D. C. (C.)
Wilkes-Barre — Donnelly, F. E. (C.)
Wadhams, R. L. (C.)
Wilkinsburg—Walker, W. J. (C.)
Williamsport—Trainer, R. F. (C.)
Wilson—Cort, A. L. (L.)

RHODE ISLAND

Providence — Cummings, W. W. (C.)
Wakefield—Thewlis, M. W. (C.)
Woonsocket — Weeden, A. A. (C.)

SOUTH CAROLINA

Bishopville—McLure, H. M. (L.)
Charleston—Cain, F. G. (L.)
Columbia—Boling, J. R. (C.)
West, C. A. (L.)
Conway—Norton, J. A. (C.)
Easley—Wallace, J. (M.)
Greenville—Gentry, C. W. (C.)
Orr, J. L., Jr. (M.)
Jefferson—Thomas, J. E. (C.)
Piedmont—Jewell, J. P. (L.)
Walhalla—Sloan, B. F. (C.)

SOUTH DAKOTA

Aberdeen—Adams, J. F. (C.)
Bellefourche — Tulisalo, O. W. (L.)
Brookings—Fisk, R. R. (C.)
Castlewood—Crawford, J. H. (L.)
Chamberlain — Crawford, R. A. (C.)
Dell Rapids—Grove, A. F. (L.)
Elk Point—Bushnell, W. F. (C.)
Hitchcock—Scheib, A. P. (L.)
Lead—Crane, H. L. (C.)
Sioux Falls—Donahoe, S. A. (C.)
Vermillion—Stoland, I. (C.)
Wilmot—Harris, C. N. (C.)

TENNESSEE

Bells—Farrow, E. (C.)
Bethel—Edmundson, L. A. (L.)
Chattanooga—Barnett, J. H. (M.)
Newell, E. D. (L. C.)
Clarksville—Ross, E. B. (C.)
Cleveland—Speck, C. T. (C.)
Cookeville—Howards, W. A. (C.)
Copenhagen—Kirkpatrick, J. W. (C.)
Dresden—Mayo, B. S. (C.)
Gallatin—Lackey, W. N. (C.)
Halls—Blankenship, J. C. (C.)
Knoxville—Bomar, F. H. (C.)
Frazier, C. A. (L.)
La Follette—Jennings, T. (C.)
Memphis—Blassingame, C. D. (C.)
Drake, J. R. (C.)
Gillespie, E. C. (C.)
Meeker, S. (C.)
Owens, J. P. (M.)
Webb, G. C. (L.)
Nashville—Alexander, H. K. (L.)
Buckner, M. G. (C.)
Hartman, M. D. (C.)
Hite, J. H. (L.)
Walton, C. D. (C.)
Shelbyville—Moody, S. S. (C.)
Westmoreland—Law, W. P. (L.)

TEXAS

Beaumont—Grimes, J. (M.)
Thomson, W. F. (C.)
Bonham—Nevill, O. C. (L.)
Coleman—Cochran, R. H. (C.)
Cooledge—Anderson, J. J. (L.)
Dallas—Bruce, B. S. (M.)
Eddy—Lucey, W. E. (C.)
Elmendorf—Smith, R. K. (L.)
El Paso—Austin, C. P. (C.)
Helm, H. M. (M.)
Liddell, T. C. (C.)
Fort Worth—Austin, C. B. (C.)
Horn, W. S. (M.)
Logsdon, H. A. (C.)
Mulkey, Y. J. (C.)
Ogden, W. H. (C.)
Gustine—Stricklin, M. L. (C.)
Harrold—Clark, J. F. (C.)
Houston—Lummis, F. R. (C.)
Milton, S. (C.)
Myers, C. D. (L.)
Robbins, F. L. (C.)
Pasadena—Acker, E. (L.)
San Antonio—Bush, H. M. (C.)
Johnson, J. J. (C.)
Scull, C. E. (C.)
Smith, B. F. (M.)
Sarita—Cooley, W. H. (L.)
Sherman—Spangler, D. (C.)
Tyler—Rice, E. D. (L.)
Waco—Hodges, E. D. (L.)
Wichita Falls—Tyson, W. S. (C.)
Walker, M. M. (M.)

UTAH

Ogden—Bartlett, F. K. (C.)
Salt Lake City—Black, B. W. (M.)
Bowman, A. J. (C.)
Mayo, W. B. (C.)
Richards, H. Y. (L.)

VERMONT

Burlington—Brown, T. S. (C.)
McIvor, D. G. (C.)
Smart, C. L. (C.)
Craftsbury—Bibby, E. N. (L.)
Danby—Farrell, E. V. (L.)
Richmond—Mitchell, S., Jr. (C.)
Vergennes—Watt, W. G. (C.)

VIRGINIA

Chase City—Finch, A. T. (M.)
Dillwyn—Brown, C. A. (L. C.)
Greenwood—Wilson, W. (L.)
Holland—Waff, J. J. (C.)
Hurley—Wire, B. O. (L.)
Max Meadows—Herndon, L. S. (L.)
Newport News—McCutcheon, R. H. (C.)
Norfolk—Devine, C. J. (L.)
Love, J. M. (C.)
Lynch, J. F. (L. C.)
Petersburg—Early, L. S. (L.)
Richmond—Wellford, B. R. (C.)

WASHINGTON

Acme—Brinson, E. L. (L.)
Burlington—Jackson, W. L. (C.)
Colfax—Hill, R. B. (C.)
Kennewick—Crosby, F. M. (C.)
Seattle—Delaney, F. J. (C.)
McKee, J. A. (M.)
Sprague—McCaffrey, E. H. (C.)
Tacoma—Argue, H. S. (C.)
Davies, J. S. (L.)
Morse, R. A. (L.)

WEST VIRGINIA

Cannelton—Shaffer, J. S. (M.)
Charleston—Swint, B. H. (L.)
Conings—Law, H. D. (L.)
Hinton—Rose, E. E. (L.)
McMechen—McGuffie, C. R. (L.)
Worthington—Orr, W. W. (C.)

WISCONSIN

Appleton—McGrath, E. F. (C.)
Beloit—Fosse, B. (M.)
Bloomington—Lewis, P. J. (M.)
Brodhead—Darby, G. S. (M.)
Sutherland, J. (L.)
Butternut—Axley, A. A. (C.)
Dousman—Nithohm, D. R. (L.)
Eau Claire—Hayes, E. P. (L.)
Ellsworth—Smith, L. G. (M.)
Endeavor—Simpson, J. E. (C.)
Green Bay—Clifford, P. M. (L.)
Kenosha—Thompson, G. E. (C.)
La Crosse—Andrew, G. F. (C.)
Simones, V. L. (L.)
Madison—Heise, H. A. (L.)
Marshfield—Vedder, J. B. (C.)
Milwaukee—Armitage, J. E. (M.)
Bading, G. A. (C.)
Curtin, A. L. (L.)
Kuhn, H. J. (L.)
Loughlin, T. F. (L.)
Mulsow, J. E. (C.)
Neilson, G. W. (M.)
Rieckoff, G. G. (C.)
Mondovi—Parmenter, E. L. (L. C.)

Readstown—Pierson, P. R. (L.)
Rosholt—Birkelo, C. C. (C.)
Sun Prairie—Allen, W. E. (C.)
Superior—Conklin, G. H. (M.)
Two Rivers—Gates, E. (M.)
Wausau—Jones, M. L. (C.)
Webster—Converse, G. L. (C.)
West Bend—Lynch, D. W. (C.)
Whitehall—Tyvand, J. C. (C.)

WYOMING

Cheyenne—Fox, G. A. (C.)
Sheridan—Benson, A. H. (C.)
Brown, H. M. (L.)

MEDICAL OFFICERS, U. S. NAVY, RELIEVED FROM ACTIVE DUTY

ALABAMA

Opelika—Thomas, E. C.

ILLINOIS

Peoria—Brown, W. L.

INDIANA

Brownsburg—Lingeman, E. L.
Indianapolis—Thurston, H. S.
Terre Haute—Mitchell, A. M.

LOUISIANA

New Orleans—Wynn, W. H.

MASSACHUSETTS

Boston—Cobb, G. N.
Keegan, J. J.

MICHIGAN

Detroit—Andrews, F. T.
Muellenhagen, W. J.

MINNESOTA

Minneapolis—Hocom, H. E.

MISSOURI

St. Louis—Hennerich, W. E.

NEW JERSEY

Long Branch—Nichols, S. H.

NEW YORK

New York—Condict, W. L.
Ellis, M. I.
Lynch, J. R.
Neubauer, A. A.

NORTH CAROLINA

Potecasi—Parker, P. G.
Woodland—Parker, W. R.

OHIO

Lima—Basinger, H. I.

PENNSYLVANIA

Philadelphia—Boles, R. S.
Schless, R. A.
Vattier, L. C.
Wishaw—Hall, W. D.

TEXAS

Fort Worth—Carter, C. F.
Mabank—Pierce, J. L.

VIRGINIA

Richmond—Trice, E. T.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Sanatorium Sold.—The Highland Park Sanatorium, Montgomery, founded by Dr. Isaac L. Watkins, in 1895, has been sold to Dr. Thomas Brannon Hubbard.

Personal.—Dr. Jacob Roscoe Snyder, Birmingham, has been appointed medical adviser at the Alabama Children's Aid Society.——Dr. Fred D. Reynolds has succeeded Dr. E. W. Edahl as assistant state bacteriologist.

Alumni Officers.—At the annual meeting of the Alumni Association of the Medical School of the University of Alabama, Mobile, the following officers were elected: president, Dr. Josiah E. Evans, Mobile; vice presidents, Drs. Abner N. Steele, Anniston, and William W. Perdue, Mobile, and secretary-treasurer, Dr. Eugene Thames, Mobile.

Hospital Notes.—It is announced that the new Coffee Memorial Hospital, Florence, will soon be in operation. The building next door to the hospital will be secured for a nurses' home.——A memorial hospital is to be built in Montgomery in honor of soldiers and sailors who served during the world war, and subscriptions for a bond issue of $50,000 are being secured for construction purposes.

Care of Feebleminded.—The Alabama Society for Mental Hygiene has recently issued a series of news bulletins relative to the increased number of the feebleminded and insane in that state. At this time there is before the legislature a mental deficiency bill carrying an appropriation for the establishment of the Alabama Home for Mental Inferiors. Many of the bulletins deal with typical instances in which feebleminded and insane persons have brought great expense to the state.

Health Bill.—A bill carrying with it an appropriation of $150,000 for the furtherance of health work in Alabama, contains the following principal features: adoption of a model law for vital and mortuary statistics; adoption of the latest methods of reporting notifiable diseases a strict social disease control law; regulations on midwifery; prevention of ophthalmia neonatorum; adoption of milk standard; provisions concerning water supply and soil pollution; the inspection of hotels, cafes, barbershops, meat and milk depots and dairies; the abolition of part-time health officers; the adoption of an all-time county health officer plan, with the county as a unit, and giving state health officers authority to remove inefficient county health officials.

FLORIDA

Personal.—Dr. Ralph N. Greene, Chattahoochee, has been elected state health officer of Florida, and has entered on his duties.——Mr. Joe L. Earman, West Palm Beach, has been elected president of the state board of health.

Provision for Orthopedic Hospital.—The state health officer announced, July 29, that the state board intended to take advantage of the authority vested in the board and either establish a state orthopedic hospital or employ physicians at various points throughout the state to conduct treatment for the prevention or correction of deformities in children.

GEORGIA

Home for Feebleminded.—The House of Representatives, July 8, passed by a vote of 140 to 19, the bill providing for a special training school for mental defectives.

Personal.—Dr. Ovid H. Cheek, Dublin, has been appointed health commissioner of Laurens County succeeding Dr. Edward B. Claxton, Dublin, resigned.——Dr. John P. Kennedy, Atlanta, has been reelected health officer, and Dr. Claude A. Smith, director of the laboratory of hygiene, of the city of Atlanta.

ILLINOIS

Charge for Telephone Consultation.—Physicians of Kane County announce that hereafter they will charge 50 cents for information given to patients or friends of patients over the telephone.

Infantile Paralysis.—Three new cases of infantile paralysis were reported at Ladd, August 6, and one additional case at Princeton, Peru and East St. Louis, respectively. During the present epidemic there have been seventy-five cases reported, with only two deaths, and the majority of cases were found in LaSalle, Bureau and Putnam counties. The situation is believed to be under control.

Chicago

Physician Fined.—Failure to comply with the state law requirements by reporting a case of sore eyes in a baby is said to have resulted in Dr. Frank J. Zuehlke being fined $25 and costs, August 5.

Laboratory to Be Enlarged.—In order to increase its capacity for the production of antipneumonia serum, the laboratory of which Dr. Preston Kyes, professor of preventive medicine in the University of Chicago, is in charge, is to be enlarged at a cost of $5,000.

Infantile Paralysis.—During July, twenty-nine cases of anterior poliomyelitis were reported to the health department, the largest number of cases for July in any year with the exception of 1916. There were, however, only three deaths from the disease during the month.

Graduate Course Lecture.—The ninth lecture of the Graduate Summer Quarter in Medical Science at the University of Illinois, College of Medicine, was delivered, August 6, by Dr. Aaron Arkin, Ph.D., professor of pathology and bacteriology in the University of West Virginia, Morgantown, on "The Influence of Some Chemical Substances on Immunity Reactions."

Nursing Courses.—The Chicago Chapter of the American Red Cross has announced an appropriation of $15,000 to finance an educational campaign for preparedness against epidemics and civilian diseases. This course is not, as was stated in the last issue of THE JOURNAL, connected in any way with the Nursing School recently opened by the department of health.——The lectures in the home nursing course at the old Loyola College are being attended by more than 1,100 women.

MICHIGAN

Personal.—Dr. Harvey E. Hoffman has resigned as city physician of Ludington.

Infant Clinics Opened.—Seven temporary baby clinics operated by the Detroit Board of Health were opened, July 11. These clinics are in addition to the six in board of health centers, and the two in settlement houses at present in operation.

Physician Arrested in Raid.—In a raid made in Detroit, August 31, according to reports, Dr. George A. Fritch, who

has been arrested many times in connection with the performance of illegal operations, was arrested, charged with performing an illegal operation.

Establishment of Health Districts.—Plans have been made to reorganize the department of health activities of Detroit, by dividing the city into ten health districts, each having a full-time physician and a staff of nurses. The new scheme is to be put in operation in Delroy district, in September, with a doctor and sixteen nurses on the staff.

Charges Dismissed.—The charges of violating the medical advertising law and of failing to report a contagious disease, which were pending against Dr. Wilson Fish, Detroit, and the charge of practicing medicine without a license which was pending against Leon Burgess, Detroit, were dismissed, July 31, by Justice Cotter on the request of the department of health.

MINNESOTA

Wassermann Laboratory Established.—The Minnesota State Board of Health opened a Wassermann laboratory, August 1, under the charge of Mr. Ralph M. Sperry, formerly of Philadelphia.

Malpractice Not Proved.—The state supreme court, August 1, decided that Drs. Robert C. Farrish and William C. Portmann, Sherburn, could not be held liable for alleged malpractice for the treatment of a child who was suffering from bone disease.

Personal.—Dr. Charles E. Smith, St. Paul, assistant secretary of the state board of health, has been designated as acting executive officer of the board.——Dr. Mabel S. Ulrich, Minneapolis, supervisor of social hygiene education, has just completed a course of lectures on social hygiene, in the summer school of Columbia University.

Sanatorium to Be Closed.—Abandonment of the Ramsey County Tuberculosis Sanatorium at Lake Owasso was approved by the Ramsey County board, July 29, when an item for $16,826 for the maintenance of the institution was stricken from the budget, at the recommendation of the board of control and at the suggestion of Dr. Arthur B. Ancker, superintendent of the City Hospital.

Bracken's New Work.—Dr. Henry M. Bracken, who was secretary and executive officer of the Minnesota State Board of Health since 1897, but resigned in May to accept a commission as surgeon of the United States Public Health Service, in charge of the War Risk Insurance Medical Service, for the Northwestern states, has opened an office in the Lowry Building, St. Paul.

Venereal Disease Clinics.—During June, 1,235 treatments were administered in the venereal disease clinics under the control of the state board of health, with a total of 526 patients. From Aug. 1, 1918, to the close of the fiscal year, July 1, 1919, 6,770 cases were reported to the division of venereal disease. The division which was formerly located in the capitol at St. Paul is now housed on the university campus in Minneapolis, in the Pathology Building, with the divisions of preventable disease and sanitation. The divisions of records, nursing and vital statistics and the executive officers are in the capitol building in St. Paul.

MISSISSIPPI

Sanatorium Sold.—Dr. Julius Crisler, owner of the Jackson Sanatorium, has disposed of his interest in the hospital to Drs. William W. Smithson and James P. Wall, Jackson.

Society Promotes Propaganda for Care of Feebleminded.—Under the secretaryship of Dr. Thomas H. Haines, Jackson, the Mississippi Mental Hygiene Commission has issued news bulletins in an endeavor to promote the establishment of a colony for the feebleminded in Mississippi.

New Hospitals.—The Biloxi City Hospital Association accepted the new hospital, July 19.——A contract has just been let for the erection of a private hospital at Marks. The hospital will be of brick and reinforced concrete construction, will have two wards and about ten private rooms, and will cost about $20,000.

NEW JERSEY

Hospital Memorial.—Residents of Gloucester will erect a memorial hospital in honor of soldiers of the country who fought in the world war. Decision was reached at a public meeting at the City Hall. It is estimated that the hospital will cost $50,000. Funds will be raised through an appropriation by the city and by public subscription. The proposed hospital will have twenty-five beds. The annual expense of operation is expected to be $9,600.

Health Board Quits.—The members and officers of the board of health of National Park resigned in a body in a movement stated to create harmony between the two factions which now exist in the fast growing borough. Mayor Edgar Walters appointed a new board. Council has approved the new appointments and the new board, consisting of William P. Abdill, Charles Chism, Frank Wakeley and E. R. Allen, will likely accept the appointments.

NEW YORK

New York City

New York's Lowest Mortality Record.—For the week ending July 26 a death rate of 8.87 per thousand was recorded, against a rate of 11.21 for the corresponding week of 1918. This is the lowest death rate recorded since the organization of the health department in 1866. The next lowest rate was that of June 21, of this year, which was 9.10 and the third lowest was that for the week of July 19, which was 9.16.

Health Center Opened.—A health center for women and girls has been opened at 43 East Twenty-Second Street, under the direction of the social education department of the Young Women's Christian Association. It is under the charge of Dr. Bessie Florence L. Meredith, and the purpose of the center is "to keep well women well." No fees are charged for examination and the center is to be opened from noon to 10 p. m. daily.

New Home for Hospital.—According to a recent announcement, the Beth David Hospital, located at Lexington Avenue and One Hundred and Thirteenth Street, has completed plans to erect a modern seven-story building on the present hospital site. Work on the new building is to begin at once. The building will afford accommodations for 150 patients and will provide increased dispensary facilities. In September, a drive for $100,000 needed for the new building will be begun.

Personal.—Dr. Simon Flexner of the Rockefeller Institute for Medical Research was elected a fellow of the Royal Society of London, June 26.——Dr. Charles T. Graham-Rogers has been commissioned captain, M. C., N. Y. N. G., and assigned to duty with the Forty-Seventh Infantry——Dr. Howard Fox has returned from France where he has been in military service and has resumed his practice.——Major James O. Tryon, field director of the American Red Cross at General Hospital No. 41, Fox Hills, Staten Island, has resigned.

The Housing of Addicts.—Following a closed session of the sinking fund commission, and a special meeting of the board of estimate, August 8, Dr. Royal S. Copeland, health commissioner, announced that the proposed home for addicts will be at the Sea View Hospital, Staten Island. The Navy Department will be advised at once of this action which will make unnecessary the turning over of Pelham Bay Naval Station to the city for this purpose which aroused such violent opposition on the part of the residents in that locality. The present action does not bid fair to meet with any greater favor. Ralph McKee, acting president of the Borough of Richmond, has asked Mayor Hylan to postpone the sending of addicts to Seaview Hospital, until a public hearing can be held to thresh out the matter. Protests against the plan are coming in from residents in all parts of Staten Island.

NEBRASKA

New Laboratory Building Nears Completion.—The new south laboratory building on the campus of the University of Nebraska College of Medicine at Omaha is rapidly being completed and will be ready for the opening of the fall session in September. The new building will house the departments of biological chemistry, physiology and pharmacology as well as the university outpatient department and the department of experimental surgery. The north laboratory building completed in 1913 houses the laboratories of anatomy, including histology and embryology, pathology and bacteriology. Between the two laboratory buildings but further in the background is the University Hospital completed in 1917 which has 130 teaching beds. These three buildings, which are uniformly four stories in height and of uniform construction, were erected at a cost of over $500,000. The campus is large enough to provide space for other laboratory buildings or hospitals which the future may demand. The University of Nebraska College of Medicine represents one of the many marvels of growth among medical schools in the United States since all building construction at Omaha has been done during the last six years.

PENNSYLVANIA

State Society Meeting.—The annual meeting of the Medical Society of the State of Pennsylvania will be held in Harrisburg, September 23 to 26, under the presidency of Dr. Frederick L. Van Sickle, Olyphant.

Personal.—George W. Stimson, Major, M. C., U. S. Army, Pittsburgh, who has been serving in France as otolaryngologist with Evacuation Hospital No. 31, landed in Newport News, Va., July 20.——Dr. Thomas D. White, Orrstown, has been elected chief of staff and Dr. Joseph J. Maclay, Chambersburg, reelected secretary-treasurer of the staff of the Chambersburg Hospital.——Dr. Julius H. Comroe, York, has been appointed chief of the York Genito-Urinary Dispensary; Dr. Chester G. Crist, Gettysburg, medical inspector for Adams County, and Dr. James P. Dalbey, Gettysburg, narcotic inspector for Cumberland and Adams counties.

Philadelphia

Personal.—Dr. Samuel T. Orton of the University of Pennsylvania Hospital has been appointed head of the Psychopathic Hospital of the University of Iowa, Iowa City.——Dr. James A. Irwin sailed, August 9, on the *Haverford* for Europe.——Drs. Hobart A. Hare, Robert G. LeCount, John C. DaCosta, Judson Daland and Morris B. Miller have been promoted from lieutenant-commanders to commanders, U. S. Navy.——Dr. William C. Johnson has been appointed assistant chief resident physician, bureau of charities.——Dr. Richard H. Harte, who organized Pennsylvania Hospital Unit No. 10, has received a communication naming him a Companion of the Order of St. Michael and St. George, conferred by Great Britain in recognition of his services during the war.

VIRGINIA

Personal.—Dr. Alexander G. Brown, Jr., has been elected a member of the staff of the department of medicine of Stuart Circle Hospital, Richmond, and Dr. Benjamin H. Gray, a member of the staff of the department of obstetrics, and both have been elected members of the board of directors.——Dr. Clifton M. Miller has been reelected a member of the Richmond School Board.

Hospital Notes.—Marshall Lodge Hospital has been incorporated at Lynchburg, Va., without capital stock, with the object of conducting a hospital and training school. The incorporators are W. E. Graves, president; W. F. Holt, trustee, and P. G. Cosby, secretary, all of Lynchburg.——The opening of the new negro hospital and the Dooley Hospital for Infections Diseases, Richmond, is being held up on account of lack of equipment. The equipment of the negro hospital will cost $20,000 and that of the Dooley Hospital, $6,000. Both are to be operated under the supervision of the Memorial Hospital which belongs to the Medical College of Virginia. The negro hospital, when equipped, will accommodate 200 patients, and the Dooley Hospital, thirty-six.

WISCONSIN

Personal.—Dr. Gustavus I. Hogue, Lieut.-Col., M. C., U. S. Army, Milwaukee, has returned after two years' service in France.——Dr. Joseph P. Donovan, Madison, is reported to be seriously ill with disease of the stomach.——Dr. Francis J. Broghammer, Superior, has been placed in charge of the free clinic for venereal diseases soon to be opened in Superior.——Dr. Edward G. Birge, son of President Birge of the University of Wisconsin, Madison, has been appointed state epidemiologist of Iowa, succeeding Dr. John H. Hamilton, Iowa City, resigned.

GENERAL

Gift to Red Cross.—The Abyssinian Mission, which recently arrived in the United States, brought to the national headquarters of the American Red Cross two £500 Bank of England notes, approximately $5,000, to be used in the work of the American Red Cross.

Nurses Cooperate with Cancer Control Society.—The American Nurses' Association, National League for Nursing Education and National Organization for Public Health Nursing have adopted resolutions pledging cooperation with the American Society for the Control of Cancer in its endeavors to obtain and disseminate information regarding the prevalence, treatment and prevention of cancer.

Sioux Valley Physicians Meet.—The annual meeting of the Sioux Valley Medical Association, whose membership includes the states of South Dakota, Iowa, Nebraska and Minnesota, was held in Sioux Falls, S. D., July 16 and 17, under the presidency of Dr. Joseph G. Parsons, Sioux Falls. Dr. Alfred E. Spaulding, Luverne, Minn., was elected president; Dr. John A. Dales, Sioux City, Iowa, secretary, and Dr. Walter R. Brock, Sheldon, Iowa, treasurer.

Methodist Hospital Activities.—According to an article in the New York *Christian Advocate*, May 29, 1919, the Methodists now have forty-seven hospitals, with a property and endowment value of $16,000,000, at which 100,000 patients, exclusive of outpatients, are treated annually. The creation of a board of philanthropies, to have general charge of the hospitals and related institutions, will be considered in the next quadrennial conference, which will meet at Des Moines, Iowa, in 1920.

Square Deal for Children.—The Children's Bureau of the Department of Labor has made its first public showing of the bureau's motion picture, entitled "Our Children." This picture shows how the citizens of Gadsden, Ala., organized for child welfare and what they did to Gadsden to make it a safe place for children to grow up in. These pictures are being shown in towns visited by the child welfare special and the events depicted are said to be typical of actual happenings which have taken place and are taking place all through the country as a result of children's year.

Bequests and Donations.—The following bequests and donations have recently been announced:

Presbyterian and St. Luke's hospitals, New York City, each $5,000 by the will of Henry B. Mace.

St. Luke's Hospital, New York City, $609,548.78; Staten Island, N. Y., Hospital $40,000; St. John's Hospital, Brooklyn, and St. Luke's Hospital, San Francisco, each $20,000, and Nassau Hospital, Mineola, N. Y., $10,000 by the will of William H. White, Cold Spring, N. Y.

The income of the Bartlett Memorial Fund of $100,000, to be devoted for ten years to medical work; medical mission in the Philippine Islands so long as they are United States territory, $50,000 to be known as the Elizabeth Gale Memorial Fund by the will of Mrs. Emma Gale Harris, Chicago.

St. Luke's Hospital, Chicago, $600 a year for ten years, by the will of Mrs. Josephine N. Smith, of Jacksonville, Ill.

The High Cost of Living.—According to a report of the National Industrial Conference Board, just issued, the cost of living for American wage earners was 71 per cent. higher in July, 1919, than at the outbreak of the world war in July, 1914. The advance is approximately 6 per cent. since March, 1919, and 12 per cent. since June, 1918. In making this estimate, the costs of food, shelter, clothing, fuel, heat, light and sundries are taken into account. In judging prices of food the board uses the average retail prices as collected for the United States Bureau of Labor statstics. The remaining figures used were obtained through questionnaires to merchants, real estate brokers, and others regularly selling the items concerned. Among food items which have made particular advances since June, 1918, were: coffee, 41 per cent.; butter, 24 per cent.; sugar, 16 per cent., and Milk, 15 per cent. Sugar, pork, potatoes, flour and lard advanced more than 100 per cent. from June, 1913, to June, 1919. The average rise in rents since 1914 has been 28 per cent.; clothing, 13 per cent. in the last year and 100 per cent. in the last five years. Fuel, heat and light have advanced 57 per cent. in five years. Sundries, including tobacco, candy, ice cream, drugs, household furnishings and supplies have advanced in general a total of 63 per cent. in five years, and 5 per cent. in the last three years.

Enforcement of the Harrison Narcotic Law.—Under date of July 31, 1919, the commissioner of internal revenue issued to collectors of internal revenue a circular letter of instruction relative to the enforcement of the Harrison Narcotic Law with regard to which recent decisions of the Supreme Court of the United States have a vital bearing. While vigorous enforcement of the Narcotic Law is greatly needed, and must obtain, it is not to be enforced in such a manner as to bring unwarranted suffering. Renewed attention is called in the circular to the fact that the constitutionality of the Harrison Narcotic Law has been clearly upheld by several decisions of the Supreme Court of the United States, as already stated. It has also been held by the Supreme Court that an order for narcotics issued by a practitioner to a habitual user for the purpose of providing him with a supply sufficient to keep him comfortable and not with a view to curing him of the habit renders the practitioner guilty of an indictable offense.

The decision of the circuit court in the Thompson case affirmed the conviction of a physician who furnished narcotics to an addict, although the defense was set up that the narcotics were furnished in decreasing quantities in an attempt to cure addiction. In opposition to the physician's

defense it was shown by the testimony that the physician did not personally attend the addict or give him personal attention sufficient to prove that he was practicing in good faith. This is an important decision and indicates that the courts do not intend to allow the defense of professional treatment to hold without supporting testimony that bona fide personal supervision was given in the case. In the Oliver case the charge to the jury as delivered by U. S. Circuit Judge Woods is important. The case concerned the sale of paregoric which has increased very rapidly since the passage of the Narcotic Law. If prescribed as a medicine paregoric is exempt under Section 6 of the Act, but if prescribed for the purpose of evading the intentions and provisions of the Act by supplying addicts with a preparation with which to satisfy their addiction "then the offense was complete" and the defendant "would be guilty."

In the administration of the law many emergency cases naturally arise. As an aid in deciding such cases the following suggestions, subject to modifications through further interpretation of the law by the courts, have been submitted by the commissioner of internal revenue:

1. USE OF NARCOTICS IN THE TREATMENT OF INCURABLE DISEASE, OTHER THAN ADDICTION

With reference to persons suffering from *a proven incurable disease such as cancer, advanced tuberculosis* and other diseases well recognized as coming within this class, the reputable physician directly in charge of bona fide patients suffering from such diseases may, in the course of his professional practice, and strictly for legitimate medical purposes, prescribe narcotic drugs for the immediate needs of such patients, provided said patients are personally attended by the physician and that he regulates the dosage himself. The prescriptions in such cases should bear the endorsement of the attending physician to the effect that the drug is to be dispensed to his patient in the treatment of an incurable disease.

Such bona fide cases of incurable disease should not occasion difficulty in the proper administration of the law, and the fact that the patient suffering from such incurable disease is addicted to the use of narcotic drugs should not complicate the matter. In this class of cases, as well as in others hereinafter mentioned, caution should be exercised to avoid being imposed upon by unscrupulous persons, and too much credence should not be given to the unsupported statements of the addict himself, because the confirmed addict will go far beyond the truth in an attempt to secure an ample supply of narcotic drugs with which to satisfy his cravings.

The primary responsibility obviously rests upon the physician in charge of the case. The Bureau manifestly is not charged with the duty of laying down any fixed rule as to the furnishing of drugs or the frequency of the prescriptions in any particular case involving an incurable disease. The danger of supplying persons suffering from incurable diseases with a supply of narcotic must be borne in mind, because such patients may use the narcotics wrongfully, either by taking excessive quantities or by disposing of a portion of the drugs in their possession to other addicts or persons not lawfully entitled thereto.

While the primary responsibility rests upon the physician in charge, a corresponding liability also rests upon the druggist who knowingly fills an improper prescription or order whereby an addict is supplied with narcotics merely for the purpose of satisfying his addiction.

2. AGED AND INFIRM ADDICTS

Cases will come to your attention where aged and infirm addicts suffering from *senility, or the infirmities attendant upon old age*, and who are confirmed addicts of years' standing will, in the opinion of a reputable physician in charge, require a *minimum amount of narcotics in order to sustain life*. In such cases prescriptions to meet the absolute needs of the patient may be written and filled without involving a criminal intent to violate the law. Even in these cases every reasonable precaution should be exercised to prevent the aged and infirm addict becoming the innocent means whereby unauthorized persons may engage in the illicit use and traffic in these habit forming drugs. Prescriptions in this class of cases should bear the endorsement of a reputable physician to the effect that the patient is aged and infirm, giving age, and certifying that the drug is necessary to sustain life.

3. THE ORDINARY ADDICT

One of the principal difficulties in administering this law will arise in the case of the ordinary addict who is neither aged nor infirm nor suffering from an incurable disease. *Mere addiction alone is not recognized as an incurable disease.* It is well established that the ordinary case of addiction yields to proper treatment, and that addicts can be taken off the drug and when otherwise physically restored and strengthened in will power will remain permanently cured. The average addict does not believe this and it is symptomatic with him to have a fear and distrust of any treatment or cure. Wherever the occasion presents itself, the hope of successful treatment should be instilled in the minds of the unfortunates addicted to this terrible habit.

Addicts who have been deprived of the drug their system craves suffer frequently most terribly. While in this condition they are likely to become public charges, since they are a menace to life and property. At the present time certain municipal and state authorities are endeavoring to handle addicts, but a project is being considered through which the U. S. Public Health Service will take over their care. Congress, however, has made no appropriation for the purpose as yet. In certain cities, namely, New York, New Orleans and Memphis, public clinics have been established for drug addicts, and the suggestion is made to the collectors of internal revenue that they should support such undertakings in their respective districts.

The Bureau of Internal Revenue makes it distinctly understood that it does not approve the so-called reductive ambulatory treatment for the reason that when the addict controls the dosage he will not be cured; then, too, through deception he may secure a supply of drugs for peddling purposes.

FOREIGN

Strike Suspends Publication of Swedish Medical Journals.—The Swedish Medical Association announces that on account of the prevailing strike of printers the publication of their three periodicals is temporarily suspended. This includes *Hygiea* and the *Handlingar* and *Förhandlingar* published by the Association.

Memorial to Hugh Owen Thomas.—The Medical Institution of Liverpool is establishing a foundation for an oration as a memorial to the late Hugh Owen Thomas, the orthopedic surgeon. What form the memorial will take depends on the support received, either the erection of a statue or bust, together with the foundation of an oration in that branch of surgery which Hugh Owen Thomas did so much to create. Primarily, the object is to create a Hugh Owen Thomas Memorial Lecture. Subscriptions to the fund may be sent to Dr. C. Thurstan Holland, Medical Institution of Liverpool, England.

LATIN AMERICA

New Laboratory at Valparaiso.—A new hygienic laboratory provided with the most modern equipment has been recently inaugurated at Valparaiso, Chile, in connection with the hospital of San Juan de Dios. The laboratory comprises sections devoted among others to bacteriology, chemistry and serum manufacture.

Work of Child Congress in Montevideo.—Among the resolutions adopted at the *Segundo Congreso Americano del Niño* held at Montevideo in May, 1919, appear the following: recommending a prophylactic campaign on behalf of tuberculous children; recommending the compulsory teaching in schools of the prophylaxis of tuberculosis, syphilis, alcoholism, echinococcus cysts and malaria; establishment of systems of school medical inspection with special reference to the prevention of tuberculosis; establishment of special bureaus to prevent infant mortality; a greater uniformity in the collection of statistics on infant mortality; extending the protective measures so that they will begin with the preconceptional period and continue until the child reaches adolescence; the consolidation in one single office of all work relating to the protection of infants; regulating the work of pregnant women; extending as far as possible to the homes themselves the protection of children; offering prizes to mothers who nurse their infants; having at all infant stations (whenever practicable) mother's milk available for distribution; adoption of legislation requiring physicians to write their prescriptions on sheets having on the back a series of hygienic precepts, these prescriptions to be kept by the patient and not by the druggist; instituting a prenatal system of prophylaxis against ophthalmia neonatorum without neglecting the Credé method of treatment; making compulsory the reporting of ophthalmia neonatorum; intensification of the antitrachoma propaganda; teaching of hygiene in primary schools, especially as related to children; organization of a system of dental dispensaries in schools and making compulsory the examination of all children's teeth.

In the section of medicine the resolutions adopted dealt especially with the desirability of having at the third Congress a number of papers on the gastro-intestinal disturbances of infants, the importance of maternal nursing and the necessity of securing sanitary dwellings for workingmen.

Another resolution adopted by the Congress provided for the creation of an American international office for child welfare work in general, to be located at Montevideo and to represent all the countries that may desire to join it. The Congress was presided over by Dr. Luis Morquio, the professor at the University of Montevideo, and well known pediatrist, and was well attended, especially from Uruguay and neighboring countries.

PARIS LETTER

Paris, July 17, 1919.

Treatment of Acute Appendicitis

At a recent meeting of the Academy of Medicine, Dr. Témoin of Bourges contributed a communication on the treatment of acute appendicitis which remains one of the most interesting subjects of surgery by reason of the extreme frequency of appendicitis, its increasing severity during the influenza epidemic, and the division of surgeons, with regard to operative procedure, into abstentionists and interventionists. The most generally accepted doctrine is that one should not operate in case the crisis has lasted more than thirty-six hours, but that, this period once past, one should pursue a waiting policy until defervescence is accomplished. Témoin does not share this opinion. He does not think a question of hours should influence the surgeon when dealing with an affection so variable in its course, in its symptoms and in its severity. In the period between 1911 and 1919 he has operated in all the cases of appendicitis he has encountered, no matter how serious they were, and it has been rather the exception for the operation to be performed during the first forty-eight hours. He has performed 1,175 operations, and his testimony is to the effect that the percentage of cures varies not by reason of the number of hours that have elapsed since the beginning of the crisis but depends on the character of the lesions and the disturbances caused by the infection. The percentage of recoveries, he states, is 100 per cent. when the lesions are limited to the appendix. The mortality, on the contrary, varies between 5 and 20 per cent., in case peritonitis has resulted as a consequence of the perforation, and is in direct proportion to the stage of evolution reached. The indications are then for as early an operation as possible, but one should not decline to operate because the beginning of the crisis dates back more than thirty-six hours. Témoin emphasizes the importance of certain details of technic and certain symptoms. In any event, from a statistical standpoint his records are complete, since he has operated in all the cases that he has encountered and in all the phases of their evolution. His records permit an instructive comparison of resection and the advantages of surgical intervention with the results and the dangers of the waiting policy.

Dr. P. Reynier, hospital surgeon and professor on the faculty of the Paris School of Medicine, remarked that in many forms of appendicitis the indications for operation depended on the cases. Témoin stated that at the beginning of a case of appendicitis one could not know what its course would be. When the symptoms are moderate in the beginning it does not follow that the case will develop favorably. For patients living out in the country the waiting policy is especially baneful and favors the development of a generalized peritonitis. It is a question of symptoms and not of hours which should guide the surgeon in acute appendicitis as well as in purulent salpingitis.

Annual Neurologic Reunions

The Société de neurologie de Paris, thinking that it would be eminently worth while to secure an exchange of views between the neurologists of France and the neurologists of allied, associated and neutral countries, has just formulated a plan for the holding of annual neurologic reunions to which will be invited all the members of the national society, its foreign correspondents, and neurologists and psychiatrists of foreign countries.

These annual reunions will be held in Paris in the month of June or July. A two-day meeting, with two sessions each day, is planned. A question that awakens both scientific and practical interest will be chosen as a subject of study and will be presented in a brief paper by some one designated in advance by the society to open the discussion. The discussions and the communications will bear solely on the subject chosen in advance. The first of these reunions will be held in 1920, and the subject chosen is: "Les formes cliniques et traitements de la syphilis nerveuse" ("The Clinical Forms and the Methods of Treatment in Neurosyphilis").

Franco-American Medical Relations

At the instigation of Dr. Dehelly, an organization has been formed in Paris which has for its purpose the establishment of constant relations between American and French medical men. At an informal gathering at which some thirty surgeons and physicians of Paris were present, a provisional committee was formed and various subcommittees were appointed. One subcommittee purposes to study the necessary means to bring about an exchange of articles in the press of the two countries. Another subcommittee will occupy itself with the organization of postgraduate courses of instruction of such a character that American physicians spending a short time in France may take advantage of it without losing a moment's time. A third subcommittee is charged with the duty of collecting such information and providing such arrangements as will make their stay in France as pleasant as possible.

LONDON LETTER

London, July 17, 1919.

Tetanus in the War

Analyses of the cases of tenanus treated in the home military hospitals, made by a committee of investigation appointed by the War Office with Major-Gen. Sir David Bruce as chairman, have been given in previous letters. A tenth analysis for the period from April to September, 1918, and an eleventh for September, 1918, to March, 1919, have just been issued. The toal number of cases in the whole series was 1,426, and the average incubation period, 39.5 days. In the tenth analysis there were eighty-seven cases of general tetanus and thirteen cases of local tetanus; the rate of mortality in the former was 29.9 per cent.; among the latter there were no deaths. In the eleventh analysis there were eighty-six cases of general, and fourteen of local tetanus; the rate of mortality in the former was 30.2, and among the latter there were again no deaths. On the recommendation of the adviser in pathology to the army in France (Sir William Leishman), the primary prophylactic dose of antitetanic serum was changed from 500 to 1,500 units. This increase, which was instituted in November, 1918, should show its good effect, if any, on the incidence of the disease among all wounded rather than in the rate of mortality among cases of declared tetanus. The prophylactic value of antitetanic serum is now established, but clinical and experimental evidence goes to show that within about ten days the immunity produced begins to decline. Accordingly, the Tetanus Committee advised that four prophylactic injections should be given to every wounded soldier at intervals of seven days. The army medical authorities decided that all wounded men, including patients with trench foot and frost bite, should receive at least four subcutaneous injections—the first at the time of the wound. Instructions were also issued that accidental wounds received at home—especially those contaminated with dirt—should be treated in the same way. These multiple prophylactic inoculations have been in vogue more or less since the beginning of 1917, but the number of wounded men receiving four inoculations has varied much according to the energy of the local authority. The results are not yet available, but the known figures suggest strongly that the death rate among those who contract tetanus tends to fall as the number of injections increases from one to five. Hence the Tetanus Committee recommends that until our knowledge of the immunizing process in tetanus is more advanced, these multiple injections should be continued.

Early in 1918, Major Carroll Bull, U. S. M. C., demonstrated his method for the production of the toxin of gas gangrene (*B. welchii*). Dr. R. A. O'Brien, of the Tetanus Committee, at once began to prepare a double serum containing the antibodies of tetanus and gas gangrene, and the committee recommended the use of this double serum as soon as possible so that its value might be tested. By the middle of July, 60,000 doses were sent to France. At a War Office conference held in November, 1918, it was decided to add the antitoxins of *Vibrion septique* and *B. oedematiens* to the double serum. In the last two analyses of cases treated in home hospitals, only two cases are noted in which the injection of double serum was given, and both the patients recovered. It appears that this "tetanus plus gas gangrene serum" in the strength used was not a marked success in the prevention of gas gangrene, though there is no evidence that the addition of antitoxins of other anaerobes had any effect, good or bad, on the tetanus antitoxin.

With regard to treatment of tetanus, the Tetanus Committee holds that "in acute general tetanus the best method lies in the earliest possible administration of a large dose of antitoxin by the intrathecal route, repeated on the following day, combined with and followed on succeeding days by subcutaneous and intramuscular injections." In acute general tetanus the best results were obtained from very large doses. Analyses of the last two series of 100 cases treated are neither for nor against the intrathecal route.

Sir Douglas Haig's Criticisms of Pensions for the Disabled

In giving evidence before the Select Committee on Pensions at the House of Commons, Sir Douglas Haig severely

criticized the methods followed. He said that in the late summer of 1918 he was appalled by the evidence received as to the methods of the state to provide for the disabled. Not only were the cases dealt with by the Disabled Officers' Fund brought under his notice, but he daily received letters from all parts of the country with the same piteous appeal. Since then matters had been in some degree improved, but not so far as the officers were concerned. He held strongly that it was the duty of the state to provide for those who had suffered in the war, but he was prepared to admit that there might be small gaps which might be filled by voluntary effort. The strain thrown on charitable institutions was sufficient condemnation of government methods and proof of the inadequacy of state pensions. In the first place, he held it was necessary to have a single authority to coordinate and advise the three ministries—war, pensions, and labor—that were affected. There was no chain of responsibility. The War Office should not discharge until the Pensions Ministry could take responsibility, and the Pensions Ministry should hold until the Ministry of Labor could make provision. Of medical boards, Sir Douglas said: "In some cases the members of the board are ignorant of the actual disease suffered. In others they are lacking in all sympathy and generosity. There is no uniformity in their decisions, and some treat every individual who appears before them as a malingerer. I strongly advise the appointment of a selected combatant officer to act as assessor so as to produce some confidence in the decision. Again, in some cases the disability is reassessed at the Ministry of Pensions to the individual's disadvantage. That this should be done without the individual being seen or heard is contrary to all ideas of British justice." He advocates a more generous provision for the wives and children of officers and men, and also for the education of their children. The total disability rates for both officers and men were inadequate. The weekly allowance should be increased to at least $10. He urges a more generous and sympathetic treatment to all who suffered from gas poisoning, shell shock and neurasthenia. Their suitable treatment was no easy matter. Employers were shy of giving them appointments. Immediate reform in the method of treatment was called for. After paying tribute to the courtesy and sympathetic attitude of the present minister of pensions and to the excellent work of the present officers, Sir Douglas appealed for: (1) a greater generosity on the part of the state; (2) a single authority to coordinate the work of ministers, and (3) an improvement in the machinery, which was working laboriously but too slowly and in many cases unsympathetically.

The Ministry of Health

A three-day conference, arranged by the Royal Institute of Public Health, has been held at the Guildhall to discuss the powers and policy of the newly constituted Ministry of Health. The conference was attended by representatives of the local health authorities throughout the country and by a number of well known physicians interested in public health. Sir Kingsley Wood, M.P., said that the Local Government Board was about to disappear, and that a new era would begin in the health administration of the country. In the past, to a large extent, prevention had been lost sight of. Health problems had been dealt with by jerks and fits and starts, and a large part of the health organizations set up had followed the outbreak of some epidemic or pestilence. There had been utterly inadequate provision for research. A beggarly sum of $300,000 a year had been granted by the government. Under the new health ministry they hoped to found an important medical research department with branches in different towns. Our present system, to a large extent, had taken a parochial and not a national view of health affairs. There were no fewer than twenty-one government departments or sections dealing with health affairs, and the whole of them were largely interested in matters which had nothing to do with health at all. We had now got one minister solely responsible to Parliament and to the country. The war had brought forward the question of stamping out venereal disease, and the Ministry of Health started on its career today facing that tremendous problem. Motherhood and child welfare and the better treatment of tuberculosis also demanded provision.

The following resolutions were carried, and it was decided to forward them to the Minister of Health: 1. Sanitary inspectors, health visitors, and similar classes of public health officials should be adequately trained, and the present system of examinations should be coordinated so as to secure one qualifying examination for the whole country. 2. The conference views with satisfaction the contemplated creation of advisory councils in connection with the work of the Ministry of Health, and urges that the services of those who have had long and practical experience in administrative and executive public health should be secured on those councils. 3. In view of the large national demands which will be made on the Ministry of Health as an organizing and controlling center, it should not be burdened with functions of detail which may deprive the local authorities of the sense of responsibility and a sense of initiative. 4. In view of the invaluable services rendered by women who are serving as elected or coopted members on local authorities, or as officers of such authorities, women should be included in large numbers on all advisory bodies, and greater facilities should be provided for the training of expert women workers in the homes of the people. 5. All questions comprised within the scope of port and maritime sanitation should receive the earnest attention of the Ministry of Health, and, in order to insure greater cooperation and confidence between British and foreign port authorities, the widening and readjustment of the agreements reached at the International Sanitary Convention are necessary. 6. Greater use should be made of the services of the British consuls in foreign ports in obtaining and transmitting information relative to the sanitary conditions of the ports. The smaller authorities should be joined together with the object of securing the whole-time services of health officers.

British Versus German Hygienic Methods in Tropical Medicine

The war has revealed the exaggerated estimate of German methods generally held and has shown that in spite of "thoroughness," they are by no means necessarily superior to those of other countries. An interesting illustration how they have been surpassed by British methods is furnished in an account by a high official from Dar-es-Salaam given to the *Morning Post*. The Germans on the East Coast of Africa, of course, recognized the connection between malaria and *Anopheles maculipennis*. But their way of combating the malarial mosquito was very unscientific, though typically German in other respects. They enclosed only the important buildings with fine-mesh wire-netting screens to keep out the mosquitoes. But that made an intolerable condition by preventing the circulation of the air and still left human beings open to mosquito bite if they lived outside the compounds or when they left them. The British military authorities, on taking possession, went to work much more soundly. They attacked the malaria at its source by carrying on a war of extermination against the mosquito. It was practically the same method which the Americans had followed with such success in Panama, and a British soldier who had seen service against the mosquito in Central America was of great value in this campaign. Swampy places were drained off, and ditches were deepened and graded to guard against stagnant water. Pools were oiled and fish introduced to eat the larvae of the mosquito. When ponds could not be oiled, larva-eating fish were introduced. One experiment of this kind failed at first from an unforeseen cause. The fish were introduced to the pond. Within a few days aquatic birds preyed on them. Another experiment was then made. Some broad-leaved aquatic plants were first introduced, and then the fish. The leaves of the plants protected the fish from the birds, and the mosquitoes were overcome. The anopheles mosquito, and with it malarial fever, has been practically banished from Dar-es-Salaam. The campaign, too, is being extended from there to other parts of German East Africa, the natives being trained in mosquito extermination.

British and American Surgeons in France

The *Times* has published a special supplement on America in the war. As the medical work was not noticed, Sir Anthony A. Bowlby (lately consulting surgeon, British armies in France), has in a letter drawn attention to the closeness of the sympathy which existed, both before and during the war, between the medical professions of the United States and of Great Britain. An American unit from Harvard University, completely staffed one of our general hospitals in France as early as 1915, and in 1917 six more British hospitals in France were staffed by the United States. In 1917 the British Army in France had from 100 to 200 American surgeons working on our front with regiments, field ambulances and casualty clearing stations, and not a few of them were killed or wounded. The services they rendered at a time when we were very short of surgeons should never be forgotten, and it would be impossible to overestimate the cordial good fellowship and mutual regard and esteem which prevailed everywhere.

Marriages

John Edward Wattenberg, Lieut., M. C., U. S. Army, Berger, Mo., on duty at Fort Des Moines, Iowa, to Miss Ione Crenshaw of San Diego, Calif., at Fort Des Moines, July 17.

Robert Boyd Pratt, Lieut.-Col., M. C., U. S. Army, Bellefontaine, Ohio, to Mlle. Adrienne Pairotteau of Vendee, France, recently.

Richard Orrin Adams, Capt., M. C., U. S. Army, Columbus, Ohio, to Miss Newman of Hampstead, London, England, June 25.

William Garretson Carhart, Major, M. C., U. S. Army, Minneapolis, to Miss Floyde Foreman, in Chicago, July 17.

Henry Franklin Schantz, Reading, Pa., to Miss Irene G. Clark of Niagara Falls, N. Y., at Reading, July 23.

Stuart McGuire, Richmond, Va., to Miss Ruth Isabelle Robertson of Walker, Ont., August 12.

James Gilmer Stone, West Grove, Iowa, to Miss Frances Heaton of Des Moines, Iowa, July 29.

Franklin Harrison Hooper to Miss Demaris Marie Berkey, both of Cleveland, August 7.

William Frederick Mayer to Leone Elizabeth Rabb, both of Johnstown, Pa., June 25.

Frank White McCorkle to Miss Mamie Woodfin, both of Uniontown, Ala., August 6.

Deaths

Charles Calvin Moyer ✠ Lincoln, Neb.; Baltimore University School of Medicine, 1893; aged 52; for six years a pharmacist at Hartleton, Pa.; but for the last twenty years a practitioner of Lincoln; secretary of the faculty and professor of obstetrics in the Nebraska College of Medicine until the discontinuance of the institution in 1908; gynecologist and president of the staff of St. Elizabeth's Hospital, Lincoln, for several years; died at his home, July 30, from carcinoma.

Hanson Thomas Asbury Lemon ✠ Washington, D. C.; George Washington University, Washington, D. C., 1896; aged 50; surgeon to the Southern Railway system, and president of the Association of Surgeons of the Southern Railway; local surgeon of the Pennsylvania and Chesapeake and Ohio systems; president of the Washington Society for Mental and Nervous Diseases; died at his home, July 21, from encephalitis.

Zelotus Clifford Wolfe, Corydon, Ind.; Kentucky School of Medicine, Louisville, 1881; aged 63; a member of the Indiana State Medical Association; for eighteen years head medical examiner for the Modern Woodmen of America and Independent Order of Odd Fellows; who was operated on in St. Anthony's Hospital, Louisville, Ky., July 23, for abscess of the gallbladder; died in that institution, July 26.

Otis Johnston, Quincy, Ill.; Chaddock School of Medicine, Quincy, Ill., 1889; aged 52; a member of the Illinois State Medical Society and for several terms president of the Adams County (Ill.) Medical Society; local surgeon for the Burlington and Quincy, Omaha and Kansas City railroads; surgeon in charge of St. Mary's Hospital, Quincy; died at his home, July 21, from heart disease.

Oliver Perry Brittin ✠ **Capt., M. C., U. S. Army,** Athens, Ill.; Barnes Medical College, St. Louis, 1908; aged 35; secretary of the Menard County (Ill.) Medical Society in 1914; who recently returned from overseas; while driving over a grade crossing near Springfield, Ill., in his automobile, July 2, was struck by a train and instantly killed.

Gaston A. Hebert ✠ Hot Springs, Ark.; Tulane University, New Orleans, 1895; aged 46; lecturer on physiology and hygiene in the St. Joseph's Hospital Training School for Nurses, and chief of the clinic of dermatology and syphilology at St. Joseph's Infirmary, Hot Springs; died in that institution, July 17.

Charles Long, Salemville, Pa.; Albany (N. Y.) Medical College, 1867; Bellevue Hospital Medical College, 1870; aged 77; a member of the Medical Society of the State of Pennsylvania; president of the Altoona (Pa.) Board of Health in 1897; died in the Altoona Hospital, July 8.

Daniel James Kelly, Washington, D. C.; Georgetown University, Washington, D. C., 1875; aged 75; assistant chief examiner in the patent office, Washington; for nearly forty years professor of physiology, chemistry and toxicology in his alma mater; died in Providence Hospital, Washington, July 26.

Charles Frederick Myers, Albany, N. Y.; Albany (N. Y.) Medical College, 1910; aged 35; a member of the Medical Society of the State of New York; attending physician to the Central Federal Tuberculosis Clinic; was instantly killed in an automobile accident in Albany, July 30.

Luke F. Bonner, Barnwell, S. C.; Medical College of the State of South Carolina, 1891; aged 51; a member of the South Carolina Medical Association; died at his home, July 25, from septicemia, three days after a surgical operation performed in a hospital in Augusta.

Edgar Mortimer Day, Pittsburgh; Johns Hopkins University, Baltimore, 1918; aged 28; who served overseas as first lieutenant, Medical Corps, with Base Hospital No. 18; was drowned at the family summer home at Point au Baril, Georgian Bay, Ont., July 23.

Henry Zimmermann ✠ **Lieut., M. C., U. S. Army,** Springfield, Mass.; University of Maryland, Baltimore, 1912; aged 30; recently discharged from the Army; was shot and killed in Springfield, August 7, by a woman whom he is said to have refused to marry.

Luke Teskey, Toronto; Trinity Medical College, Toronto, 1877; aged 70; a member of the faculty of the University of Toronto, and on his retirement made emeritus professor; died in the Toronto Hospital, May 1, from carcinoma of the pylorus.

Jay D. Whelpley, Howard City, Mich.; Grand Rapids (Mich.) Medical College, 1901; aged 49; a member of the Michigan State Medical Society; died at his home, May 26, from cholecystitis and pancreatitis following influenza.

Davis Herren ✠ **Lieut., M. C., U. S. N. R. F.,** Crownpoint, N. M.; Memphis (Tenn.) Hospital Medical College, 1912; aged 31; formerly in the United States Indian Service; died in Colorado Springs, Colo., July 25, from tuberculosis.

Carter H. Smith, Lebanon, Ind.; Rush Medical College, 1873; aged 84; who on completion of a half century of practice in 1911, was given a banquet by the Boone County Medical Society; died at his home in Lebanon, July 25.

Alexander George Crockett, Max Meadows, Va.; Vanderbilt University, Nashville, Tenn., 1885; aged 57; a member of the Medical Society of Virginia; senator from his district for four years; died at his home, July 27.

William Patrick Sweeny ✠ **Capt., M. C., U. S. Army,** Saratoga Springs, N. Y.; Albany (N. Y.) Medical College, 1915; aged 26; was instantly killed in an automobile accident in Albany, N. Y., July 30.

George K. Okin, Brownville, N. Y.; Long Island College Hospital, Brooklyn, 1918; an intern in the Seaside Hospital, Coney Island, N. Y.; was drowned while bathing near the hospital, July 17.

Charles D. McCarthy ✠ Geneva, N. Y.; University of Buffalo, N. Y., 1888; aged 58; health officer of Ontario County, and surgeon to the Geneva Hospital; died, July 8, from general endarteritis.

Effie A. Current, Danville, Ill.; Medical College of Indiana, Indianapolis, 1901; aged 44; at one time coroner of Kearney County, Neb.; died at her home, June 11, from tuberculosis of the lungs.

Seth James Crudup, Julian, Neb.; Baltimore Medical College, 1890; aged 61; who was operated on for carcinoma of the stomach, July 18; died in a hospital in Richmond, Va., July 20.

Beauregard W. Flinn, Little Rock, Ark.; Memphis (Tenn.) Hospital Medical College, 1881; aged 57; a member of the Arkansas Medical Society; died at his home, July 24.

Henry Dousin Leitch, Vancouver, B. C.; Trinity Medical College, Toronto, 1884; aged 60; died in the Vancouver General Hospital, April 21, from pyonephrosis.

Frank Albert Towsley ✠ Midland, Mich.; University of Michigan, Ann Arbor, 1880; aged 61; died at the Battle Creek Sanitarium, July 23, from nephritis.

William Deadrick Nelson, Jr., Canton, Ill.; Rush Medical College, 1884; aged 62; a member of the Illinois State Medical Society; died at his home, July 28.

Edward Richard Trippe, Easton, Md.; University of Maryland, Baltimore, 1862; aged 79; died at his home, July 1.

✠ Indicates "Fellow" of the American Medical Association.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

HORMOTONE AND HORMOTONE WITHOUT POST-PITUITARY

Report of the Council on Pharmacy and Chemistry

"Hormotone," of the G. W. Carnrick Company, is advertised as "A pluriglandular tonic for asthenic conditions." "Hormotone Without Post-Pituitary" is recommended for use "in neurasthenic conditions associated with high blood pressure." These preparations are sold in the form of tablets for oral administration. The Council declares these preparations inadmissible to New and Nonofficial Remedies because: (1) Their composition is semisecret (Rule 1); (2) the therapeutic claims are unwarranted (Rule 6); (3) they are sold under names not descriptive of their composition but suggestive of indiscriminate use as "tonics" (Rule 8); (4) in the light of our present knowledge the routine administration of polyglandular mixtures is irrational (Rule 10). In explanation of this action, the Council authorized publication of the report which appears below.

W. A. PUCKNER, Secretary.

Each tablet of "Hormotone" (G. W. Carnrick Co., New York City) is said to contain 1/10 grain of desiccated thyroid and 1/20 grain of entire pituitary, together with the hormones of the ovary and testes—the amounts and the form in which the latter are supposed to be present are not given. From this it will be seen that the only definite information given to the medical profession regarding the composition of Hormotone is that it is a weak thyroid and a still weaker pituitary preparation.

What results can be anticipated from one or two tablets three times daily (the recommended dose of Hormotone) each containing 1/10 grain of thyroid and 1/20 grain entire pituitary? Such doses of thyroid may, of course, have a beneficial action in a limited number of cases of myxedema and cretinism. An extract of the posterior lobe of the pituitary (Liquor Hypophysis, U. S. P., for example) will, *when injected subcutaneously or intramuscularly*, have a pronounced effect on the parturient uterus; its action on certain other forms of smooth muscle will be much less certain. But the *oral administration* (for which Hormotone is recommended) of the posterior lobe of the pituitary has not been shown to have any such effect. The use of the anterior lobe in doses of 1 to 4 grains (doses very many times larger than those recommended for the entire gland in Hormotone) is in the experimental stage and its only probable value seems to be in those cases of known gland deficiency.

As to the other alleged ingredients of Hormotone—hormones of the ovary and testes, amounts not stated: all physicians know the uncertainties attending the use of ovarian preparations and the serious question as to whether testicular extracts have any therapeutic value. Whatever may be the physician's views as to the probable therapeutic value of these organs, the first thing he desires to know is how much of the substance he is giving and from what part of the gland it is obtained.

So much for the facts; yet the physician is asked to jump from this region of solid fact into a sea of hypothesis; to believe that small amounts of the well-known drugs thyroid and pituitary, plus an unknown amount of unknown hormones of the testes and ovary are of great value in conditions that in themselves are often purely hypothetical. He is asked to believe that this combination has virtues in such conditions as "hypofunction of the adrenal system," neurasthenia, the "fatigue syndrome," amenorrhea, dysmenorrhea, "natural and artificial menopause," sexual neuroses, cold extremities, cardiac asthenia, low blood pressure, infantilism, sterility, melancholic conditions, obesity, anorexia, anemia, slow metabolism, constipation, psychasthenia, lowered virility and the sexual neuroses of the unmarried, hysteria following functional exhaustion of the nerve centers, frigidity, etc., etc., especially if he guesses that the trouble is due to a "pluriglandular disturbance," "glandular hypofunction," an "adreno-pituitary deficiency," suboxidation, etc.

The physician is invited to use Hormotone because, among other reasons, each alleged constituent is said to be "in physiologic sympathy and therapeutic harmony with the others," and further, because:

> "Pluriglandular therapy has the endorsement of high authorities, is both logical and effective and Hormotone is a splendid example of it. It will be seen at its best where the patient lacks snap and vim and vigor. Asthenic conditions necessarily indicate hypofunction of the adrenal system . . ." etc.
>
> "The use of gland extracts in the treatment of aplasias of the pluriglandular system has become an established therapeutic measure of miraculous potency (Bayard Holmes: The Internal Secretory Glands, *Lancet-Clinic*, Sept. 19, 1914)."

The G. W. Carnrick Company also advertises a "Hormotone Without Post-Pituitary," each tablet of which is said to contain 1/10 grain desiccated thyroid, and to "present" "hormone bearing extracts of thyroid, anterior pituitary, ovary, and testes." This product is just as irrational as "Hormotone."

Correspondence

ILLINOIS' COMMENDABLE CONSOLIDATION OF MEDICAL CHARITIES WITH MEDICAL EDUCATION *

To the Editor:—Illinois has discovered that its legislature desires to do the right thing but depends on the experts of the executive departments to give it the information on which to act. It is obvious that the legislature cannot know, in advance, the details of all needs which lead to requests for legislative action. The consolidation of 125 commissions into nine departments, each in charge of a single director gave Illinois its opportunity to do things right. The results have been that laws were enforced, routine work was accomplished promptly and well, and, in spite of the war time, the total of appropriations was not exceeded, and yet the state found itself with a full treasury. The legislature, therefore, has confidence in the executive officers. It has not only asked for their advice but also acted on it and has granted all reasonable requests.

To the writer was given the administration of all of the hospitals, charitable and penal institutions of the state; he was also given certain legal duties and instructions. The department was expected to conduct research into the causes and treatment of insanity, feeblemindedness, delinquency, dependency and crime; to train physicians, nurses and others for the special work of the department and, in general, to do whatever was necessary to perfect its service to the public. Those connected with the department could not conduct research as a matter of routine. They were not educators but professional administrators. Another creature of the state, however, the University of Illinois, was organized to do, through its medical school, the very things the department was not organized to do. A perpetual cooperative agreement has been entered into with the university, therefore, whereby the medical school will have in charge the professional work and teaching and the department of public welfare will administer the entire group of institutions, including the medical school. This arrangement provided for future development and was for the public good. The legislature promptly approved the agreement and made an initial appropriation of $1,500,000 for the land needed and to begin the construction of a psychiatric institute, a surgical institute for children, a new eye and ear infirmary and a clinical hospital. By approving the agreement they also committed themselves to a plan requiring several millions of dollars in the future. The director of public welfare will control all building operations for both parties, and an endeavor will be made

* See editorial, p. 538.

to produce buildings which will be educational in character rather than of the institutional type. The buildings will include a clinical laboratory, a reconstruction hospital, a contagious disease hospital, a medical college and others to be added as needed.

As the department of public welfare can furnish clinical material of almost any kind and in any quantity, the result should be a state university medical school with unrivaled facilities for teaching, research and training of professional talent. The department of public welfare will benefit because it will have met its obligations and will be enabled to secure an abundance of trained specialists for its various hospitals and other institutions.

The State Surgical Institute for Children and the three other buildings provided for will be erected on the deserted Cubs' Park baseball field, Lincoln and Polk streets, Chicago, which is being purchased by the state for the sum of $400,000. The Eye and Ear Infirmary, the largest of the group, will replace the old Eye and Ear Hospital at Clinton and Adams streets. But the hospital we are most proud of is the State Surgical Institute for Children and we plan to make it excel anything of its kind in the country. The Clinical Hospital for Children will contain every modern feature used in medical schools. The Psychopathic Hospital will devote its time to research work with the feebleminded, studying exhaustively plans for training morons and borderline cases in useful occupations. The medical personnel at the new group will be chosen from physicians now attached to the state medical school and students graduating from the state school will be given preference for appointment as interns. Construction work on the buildings will begin in the spring.

Charles H. Thorne, Springfield, Ill.
Director of Public Welfare, State of Illinois.

NEW METHOD FOR OPENING HYPODERMIC NEEDLES

To the Editor:—To one who is accustomed to using hypodermic needles frequently, as in the administration of vaccines and other medicinal preparations, the value of some method by which the lumen of the needles can be kept free of rust and other materials in the shortest possible time is a distinct advantage over the method of boiling in a solution of sodium carbonate, as recommended in The Journal, and the use of the copper wire, etc. The use of a small instrument known as the pivot broach, used by jewelers to drill very fine holes in watch repairing, permits a needle to be opened very quickly. This instrument is a three-cornered piece of tempered steel with a round handle at one end, the cutting edges being the three corners which act as a drill. It is the size of the lumen of the needle, and the same length as the average hypodermic needle. If the broach is introduced at either end with a semirotary motion, as if drilling, the needle can be entirely freed of rust or other materials. Care, of course, must be exercised in handling the broach, as it is likely to snap off if it is forced too hard in the beginning. When the needles are opened by this method, I have found them very satisfactory, and they last almost indefinitely. The broaches can be obtained from any jewelers' supply house at a very moderate cost.

Milton H. Prosperi, M.D., Washington, D. C.

DIFFICULTY OF OBTAINING BRANDY AT DRUG STORES

To the Editor:—It seems to me that this war-time prohibition measure is a great deal too drastic as regards the medical profession and drug stores. As the measure now stands, it is almost impossible to prescribe brandy in any amount, either alone or in mixture, and have it filled at the drug stores. Practically all the drug stores here cannot afford to pay for the license for liquor, in the small amounts in which it is ordered by physicians. At present, with the large number of infant diarrhea cases in which brandy is needed as a stimulant, brandy is almost impossible to obtain. I have had quite a number of cases in which brandy was imperative, but the patient made a canvass of all the drug stores, and could not obtain any. Something should be done by the medical profession whereby prescriptions for brandy in amounts of 1 or 2 drams in medicinal mixtures could be easily and readily filled.

Lionel L. Albert, M.D., Central Falls, R. I.

CALCIUM CHLORID IN INTESTINAL TUBERCULOSIS

To the Editor:—I have read with interest Dr. Maurice Fishberg's article on this subject in The Journal, June 28. The intravenous administration of calcium chlorid solutions as an aid in the treatment of pulmonary and glandular tuberculosis has been continuous in my practice for the past five and one-half years. I published my first report on this work in the *Indianapolis Medical Journal*, January, 1915. Since that time have used this method as an adjunct in the treatment of both pulmonary and glandular forms of tuberculosis. I am convinced that the intravenous use of calcium chlorid solutions is a distinct aid in the treatment of these forms of tuberculosis.

Thomas J. Beasley, M.D., Indianapolis.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

OPPORTUNITIES FOR MEDICAL PRACTICE IN MEXICO

To the Editor:—Please give me information regarding the opportunities for physicians and surgeons in Mexico.

J. R. E., M.D., Baltimore.

Answer.—At present, opportunities for American physicians and surgeons in Mexico are rather limited. In Mexico City there are already a number of American physicians who, it is reported, are more than sufficient to serve the decreased American colony. In smaller towns there may be a better opportunity, but conditions are at this moment too uncertain to make it worth while to take the chance. The American consuls would, of course, have definite information in regard to conditions in any specific state or town. A physician with exceptional ability could, of course, make room for himself practically anywhere. The practice of medicine is entirely "free" in all Mexico, with the exceptions of the states of Puebla and Jalisco, where only those having officially recognized degrees are allowed to practice.

INDUSTRIAL MEDICINE IN SOUTH AMERICA

To the Editor:—I am desirous of learning something about the opportunities in industrial medical work in Central or South America. Can you furnish me any of this wanted information through your new connections in issuing the Spanish edition of The Journal, or can you advise me as to whom to correspond with on this subject?

W. A. J., M.D., Chicago.

Answer.—The opportunities for an American physician who wishes to engage in industrial medical work in Central or South America would seem to be limited to those American companies which are in business there. Among these may be mentioned the United Fruit Company, the new branches opened by meat packers in Argentina and Uruguay, and more recent ramifications of the steel industry in Peru, especially the Schwab interests. It would seem very desirable and practically necessary that any American physician going to any Spanish-speaking country should know the language. In The Journal, August 2, an American corporation advertises for a physician for duty in Peru. Names and addresses of American firms with business interests in Central and South America can be obtained from the United States Chamber of Commerce or the United States Bureau of Foreign and Domestic Commerce, Washington, D. C.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ALASKA: Juneau, Sept. 2. Sec., Dr. L. P. Dawes, Juneau, Alaska.
HAWAII: Honolulu, Sept. 8-10. Sec., Dr. J. R. Judd, Honolulu, Hawaii.
ILLINOIS: Chicago, Sept. 22-25. Sec., Mr. Francis W. Shepardson, Capitol Bldg., Springfield.
IOWA: Des Moines, Sept. 16-18. Sec., Dr. Guilford H. Sumner.
MASSACHUSETTS: Boston, Sept. 9-11. Sec., Dr. Walter P. Bowers, State House, Boston, Mass.
NEW HAMPSHIRE: Concord, Sept. 11-12. Sec., Dr. Chas. Duncan, Concord, New Hampshire.
NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 16-19. Mr. Herbert J. Hamilton, Assistant, Professional Examinations, Albany.
RHODE ISLAND: Providence, Oct. 2-3. Sec., Dr. B. U. Richards, State House, Providence.

NEW YORK ASSOCIATION FOR MEDICAL EDUCATION

The proposal of a small group of physicians, surgeons and medical teachers of New York to establish a central clearing house for medical education has so favorably impressed their colleagues that what has been for years past a dream and a hope has now become an accomplished fact. The medical profession has developed within itself an active organization to stimulate, obtain support for, and expand medical education for students and graduates of medicine in the interest of an ultimate better service to the public.

With a committee on education that embraces the deans of the four undergraduate medical schools and representatives of the graduate teaching institutions, and with all the principal institutions for medical teaching and service, and for those devoted to disease prevention and health protection, represented on the board of trustees, the best results of cooperation and coordination are certain to be achieved.

The Association for Medical Education is now organized to offer opportunity to teachers and workers in the medical sciences, whether they are practitioners of medicine or wholly engaged in teaching and research, to participate in the consideration and direction of all matters affecting medical education. It also offers a medium through which the unsurpassed clinical material and research facilities of this metropolitan area may be made readily and conveniently available to all students and graduates of medicine from our own or other countries. The development and special encouragement of teachers of medicine will be one of the important functions of this association.

It is felt by the incorporators that the city of New York is under obligation to assemble and provide resources for the teaching of medicine, in its broadest terms, in a manner compatible with the city's position as an international port and traffic center, and to an extent worthy of its reputation as welcoming hostess to the visitors of the world. Furthermore, the profession feels keenly its duty to pay fitting tribute to the services and contributions of the many leaders of medicine and its allied sciences who have honored this city by their work in healing the sick and controlling disease.

No one medical school or group of special interests, hospitals, laboratories or individuals can command sufficient support to assume the representation or direction of an undertaking in which the entire profession and the public have so large a stake. The spontaneous and immediate support given to the association's plans by the whole medical profession of New York City is a guarantee of the representative and democratic character of the undertaking. To accomplish the purposes of the association, a corporate membership of 300 active workers in the practice and teaching of medical sciences was selected, and from this body a board of trustees, twenty-seven in number, has been duly elected. General members from the profession at large are provided for in the constitution, and will soon be requested to take an active share in the deliberations of the association. Among the incorporators are many who are not at present engaged in teaching, as well as members of the faculties of medical schools and of the attending staffs of both private and public hospitals. A finance committee has already obtained, within the profession, sufficient funds to provide for the immediate establishment and permanent maintenance of a bureau of information and correspondence at the New York Academy of Medicine, 17 West Forty-Third Street. Reliable data concerning all the facilities that are now or can be made available for teaching purposes will be assembled here; and from this office information concerning the details of courses, dates, fees, qualifications demanded, attendance requirements, etc., will be issued by bulletins and letters. This activity of the Association for Medical Education will be supplementary to the excellent work already well established, and which has been of such great value, by the bureau of clinical information of the Society for the Advancement of Clinical Study.

A committee on education has been most carefully selected, and is now organized to fulfil its difficult functions in a spirit of fairness and firmness. It will be the duty of this committee to prepare plans and standards that shall insure a permanent improvement in the character of medical teaching in New York City; to keep itself informed concerning and to pass on the qualifications of teachers and the character of the courses they offer to graduate students of medicine, and to observe and regulate the manner in which engagements are met by those offering courses under the auspices of the association.

In order that the work outlined by the association shall receive active and sustained consideration, an executive secretary has been engaged to devote his entire time to the development of the project. For this position the executive committee has selected Dr. Henry O. Reik of Baltimore, recently lieutenant-colonel in the Medical Corps of the United States Army and commanding officer of Base Hospital No. 67, American Expeditionary Forces; formerly associate in ophthalmology and otology (1900 to 1912) in the Johns Hopkins University Medical Department, and secretary-treasurer of the International Otological Congress of 1909 to 1912.

The active cooperation of the public health committee of the Academy of Medicine was promptly offered to the association, and a study of the dispensary and hospital teaching facilities of the city has been undertaken by its permanent staff.

What has been a gain to one school or hospital has often heretofore resulted in a loss or injury to the interests of another, and it has seemed essential for the uniform development of all branches of medical science, in every medical school, that a generous provision of funds be actively sought and then so distributed, according to plans matured and agreed to by the association, as to serve the best interests of all institutions and of the public. In forwarding so ambitious a scheme, there must be tactful education of the expectant recipient, the prospective donor and the medical profession as well, in the possibilities of the benefit and the urgency of present needs. A medical education foundation, to meet demonstrated needs, to insure adequate provision for research, teaching, practical training and progressive reeducation of the practitioner, can be made to yield results in safeguarding health and the salvaging of sick and maimed, out of all proportion to the investment. Confidence in the generosity of a well informed public is a fundamental faith of the present day—a faith that has never been betrayed. Special pains will be taken to avoid interference with any other solicitations now being made, and with the sources of benefactions now reached by the various colleges and hospitals in the city.

Looking to the comfort and welfare of visiting physicians and surgeons, the association contemplates establishing a central residence or meeting place with provision for social life on lines similar to those developing in London and Paris in anticipation of the need of such professional homes for visiting Americans and colonials. Nor will efforts be spared to obtain close coordination with similar associations of physicians in other cities, under the general central auspices of the Council on Medical Education of the American Medical Association. One of the privileges of the New York association will be to see that those seeking opportunities in clinical, laboratory or field work, which may be better pro-

vided elsewhere than in the metropolitan area of New York, shall be promptly directed to the best teachers and the best facilities wherever they are to be found in this country or in Canada. Cooperation with the committees in London and Paris, which are organizing the medical resources of England and France for the benefit of visitors from the Americas, will be favored, and this may prove to be one means to return in part the courtesies and assistance the American medical officers received without stint from their colleagues during service overseas.

Though New York possesses, to an even greater degree than Berlin and Vienna, most of the elements that made those cities world medical centers, it has not been previously prepared to supply the demands of postgraduate students. Furthermore, a broad distribution from this storehouse of accumulated scientific knowledge that might and should be applied to the prevention of disease and to the healing of the sick has not previously received anywhere in this country its fair share of attention from the genius of American organization and liberality. This association now desires, through proper organization and the procurement and employment of an efficient endowment, to foster such use of this possessed knowledge and facilities as will result in widespread benefit to the whole country. Singleness of purpose, united effort, and personal unselfishness, coupled with unbounded ambition for the advancement of the profession, are certain to win a generous public support.

The officers of the association are: president, Wendell C. Phillips, New York; first vice president, George David Stewart, New York; second vice president, Glentworth R. Butler, Brooklyn; secretary, Haven Emerson, New York; treasurer, Arthur F. Chase, New York.

The association is now in the process of incorporation under the laws of the state of New York, and the trustees who have already accepted their election are: Samuel A. Brown, Emanuel Libman, William Francis Campbell, James Alexander Miller, Rufus I. Cole, Walter L. Niles, William Darrach, William H. Park, Charles N. Dowd, Charles H. Peck, Charles A. Elsberg, Eugene H. Pool, James Ewing, Thomas W. Salmon, John A. Hartwell, Frederick Tilney, Otto V. Huffman, George Gray Ward, Jr., George W. Kosmak and Adrian V. S. Lambert.

Book Notices

Traité de Physiologie. Par J.-P. Morat, Professeur à l'Université de Lyon, Correspondant de l'Institut, et Maurice Doyon, Professeur adjoint à la Faculté de médecine de Lyon. Fonctions de Relation. Par J.-P. Morat. Fonctions de Reproduction. Par M. Doyon. Paper. Price, 25 francs. Pp. 872, with 221 illustrations. Paris: Masson & Cie, 1918.

The present volume is the fifth and last of a set dealing with physiology. Unfortunately, the first four volumes did not reach The Journal for review. What is said here, therefore, is necessarily limited to the single volume at hand without reference to the relation of the volume to the others of the set which have preceded it.

The first half of the book deals chiefly with the organs of special sense and ends with a chapter on locomotion and phonation; the remainder is concerned with reproduction, including necessarily a discussion of lactation and the internal secretion of the gonads. In many respects the presentation of the subject matter is different from the usual mode of presentation found in similar English and German texts. The discussion of the special senses is essentially that of years back; for little of great importance has been discovered since the days of Donders, Kühne, Helmholtz, Ewald, Herring and others who were most actively engaged in advancing our knowledge of the special senses. Parenthetically, we express our surprise that the method of retinoscopy, the principal method of correcting errors of refraction, does not even receive mention. The physiology of reproduction and internal secretion of the gonads is presented fully and satisfactorily.

The book is remarkably free from errors. The legends of Figures 69 and 70 ought to be interchanged in order to conform to the facts which the diagram intend to illustrate.

A more serious criticism is the almost complete disregard of the research of American investigators. The most notable example is the failure of the author (Morat) even to refer to the work of Cannon, Carlson, and others in his discussion of the physiologic mechanism underlying the sense of hunger, in spite of the fact that the scientific contributions on this subject which have appeared in various American journals comprise about fifty papers and a monograph of some 300 pages by Carlson. If the first four volumes disregard the results of American investigations as does this volume, the authors must be charged with inexcusable ignorance of the literature or with chauvinism.

Hospital Accounting and Statistics. Compiled and arranged by William V. S. Thorne, Treasurer and Member of the Board of Managers of The Presbyterian Hospital, New York. Fourth edition. Cloth. Price, $1.50. Pp. 119. New York: E. P. Dutton & Co., 1918.

This is a standard handbook on the forming of a system of accounting for hospitals that will be simple and intelligeht and that will satisfy certified public accountants. Every account that is generally required to be kept in a hospital is classified, and its use is explained. Illustrations make clear the methods of keeping the books, making financial statements, accounting for each of the separate departments, apportioning the expenses, and accounting for reserves and endowments. In addition to financial forms and methods, the book discusses the other hospital records and statistics, illustrating practical forms for use in all the various departments. There is a large number of inserts that are copies of forms in actual use by many of the leading institutions. Hospitals and medical societies have been making an effort to bring about a uniform system of records and reports not only to increase the efficiency in the hospitals but also to facilitate the comparison of financial records and statistics, and medical records and statistics. This book furnishes a practical basis for the adoption of standard records and reports that shall both minimize clerical labor in the hospital and provide a common basis for comparisons between institutions.

Diet in Health and Disease. By Julius Friedenwald, M.D., Professor of Gastro-Enterology in the University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, and John Ruhrah, M.D., Professor of Diseases of Children in the University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore. Fifth edition. Cloth. Price, $6. Pp. 919. Philadelphia: W. B. Saunders Company, 1919.

The fifth edition of this most valuable work is fully up to the standard of previous editions. It is an encyclopedia on diet. The authors explain that the stress of war work prevented the inclusion of any literary references prior to January, 1918. A considerable space is occupied by tabular matter and discussion relative to alcohol and various alcoholic products. Very possibly this may be greatly abbreviated in future issues, since the analysis of thirty or more brands of beer can have but slight interest for those who have no beer at all. The book presents briefly and particularly all of the well known dietary methods; for example, those of Leube, the Karell method, the Sippy diet, the Prochownick diet for pregnancy, and in fact a series of diets for every possible illness, institute or individual. Numerous supplementary tables add to the value of the text.

The Organs of Internal Secretion: Their Diseases and Therapeutic Application. A Book for General Practitioners. By Ivo Geikie Cobb, M.D., M.R.C.S., Neurologist Brinnington Section Second Western General Hospital. Cloth. Price, $2.50. Pp. 274. New York: Williaim Wood & Co., 1919.

In spite of the statement in the preface to the second edition of this book, there is no evidence that "the entire book has been carefully revised and brought up to date." It is virtually a reprint of the first edition. Aside from the addition of several paragraphs and one new chapter, it contains the same misinformation, contradictions, misleading statements and typographic errors as in the first edition, and is in the same excellent literary form. The review of the book printed by The Journal, March 23, 1918, p. 876, applies as well today

to the new edition as it did when the book first appeared, with the exception that the page references given in the first review are necessarily not the same. The chapter on "The Endocrine Glands and Nervous Disorders" which has been added to the new edition conforms in style and content to the remainder of the book previously published.

THE SOUL IN SUFFERING: A PRACTICAL APPLICATION OF SPIRITUAL TRUTHS. By Robert S. Carroll, M.D., Medical Director, Highland Hospital, Asheville, North Carolina. Cloth. Price, $2. Pp. 241. New York: The Macmillan Company, 1919.

Dr. Carroll endeavors to condense in his little book the experiences of many years spent in contact with those sick in body, mind and soul. "Religion and medicine," he says in his introduction, "have stood too long on opposite sides of the couch of suffering, forgetting, one the body and the other the soul, and both, the mind." Assuming that the mission of suffering is to build character, he endeavors to bring together the practical benefits of modern scientific medicine and the aspirations of religion. His book can be read with pleasure and profit by physicians and patients, and by any others endeavoring to solve that great problem of human existence, pain.

Society Proceedings

COMING MEETINGS

American Assn. of Electro-Therap. & Radiol., Philadelphia, Sept. 9-12.
Am. Assn. of Obstetricians and Gynecologists, Cincinnati, Sept. 15-17.
American Roentgen Ray Society, Saratoga Springs, Sept. 3-6.
Indiana State Medical Assn., Indianapolis, Sept. 24-26.
Medical Society of the Missouri Valley, Des Moines, Sept. 18-19.
Pennsylvania State Medical Society, Harrisburg, Sept. 22-25.
Tri-State District Medical Society, Rockford, Ill., Sept. 1-4.
Utah State Medical Association, Salt Lake City, Sept. 9-10.
Washington State Medical Association, Spokane, Sept. 11-13.
Wisconsin State Medical Society, Milwaukee, Oct. 1-3.
Wyoming State Medical Society, Thermopolis, Sept. 10-11.

AMERICAN THERAPEUTIC SOCIETY

Annual Meeting, held at Atlantic City, N. J., June 6 and 7, 1919

(*Concluded from page 449*)

Proportionate Dose of Quinin Required to Produce the Same Results in Treating Malaria in Children of Different Ages as in Adults

DR. C. C. BASS, New Orleans: No two textbooks on malaria give the same treatment, unless one copies from another. The dose for adults is stated as being from 10 to 40 grains, but that for children is very indefinite. There are two ways to control malaria: one by destroying mosquitoes, the other by controlling the parasite in man. Malaria can be eliminated from a locality by whichever means is most practical. In large areas the disinfection of persons is more practical than ditching and draining. In an area of the Mississippi Valley, with a population of 31,459 persons, the highest percentage of infection was in the 5 to 10 years group, and most malaria was in persons under 20 years of age. By ordinary means of treatment few persons are thoroughly disinfected, and will subsequently relapse. Relief of clinical symptoms does not mean disinfection.

Children under 1 year of age should be given 0.5 grain; at 1 year, 1 grain; 2 years, 2 grains; 3 and 4 years, 3 grains; 5, 6 and 7 years, 4 grains; 8, 9 and 10 years, 6 grains; from 11 to 14 years, 8 grains, and at 15 years the adult dose, 10 grains. Ten grains of quinin every night for eight weeks disinfects 90 per cent. of all infected persons. The remaining 10 per cent. have to receive three 10 grain doses a day for three or four days, and later 10 grains a day for eight weeks. The amount of quinin taken is the only criterion as to disinfection of the infected individual.

DISCUSSION

DR. DOUGLAS VANDER HOOF, Richmond, Va.: The physician generally thinks he has done his duty when he has relieved symptoms. For the sake of the community the patient has to be disinfected. A good deal of harm is done by giving proprietary medicines containing small doses of quinin, by which means the malarial parasite becomes, to a certain degree, resistant.

DR. JACOB DINER, New York: There is little difference between quinin sulphate or chlorid, except as to palatability. In giving quinin to children, one should not use condensed milk, as that tends to create a distaste for milk and deprive the child of nourishment. The stimulation of taste buds is caused by solution. Therefore if given in an insoluble form, such as alkali, salicylate or tannate, it will accomplish the purpose just as well as when given in some syrup. The latter as sold in drug stores often contains only 1 grain per dose.

DR. HORATIO WOOD, Philadelphia: The question of dosage for children opens an interesting problem. Dr. Bass bases the dosage on the age of the child. Cowling and Young approximate the weight of the child. A physician should be able to guess the weight of the child, and this is the proper way. Where therapeutics is carried out in such a wholesale manner, this might be difficult. It was interesting to hear that insoluble salts are absorbed as readily as soluble salts. In regard to disguising taste, sweet disguises bitter. The taste of quinin can be disguised by putting it in a suspension of gum acacia. I find that methyl thionin has a decided antiperiodic effect, especially against the gametes. It may be found that the parasites become quinin fast by developing a resistance.

DR. J. B. WHITE, New York: Two things are important: the treatment of the paroxysm and the prevention of recurrence. Small amounts of quinin can be given before the paroxysm, to allow of assimilation, and from 30 to 40 grains during the paroxysm. With a mixed paroxysm, such as double quotidian or double tertian, 20 grains, three times a day is better.

Influenza and After

DR. THOMAS F. REILLY, New York: In most of the acute diseases, the subsidence of the acute symptoms is commonly followed by a return to normal and freedom from symptoms. In the influenza of this year, however, one had to deal with an almost diametrically opposite clinical picture. In about one half of the cases a syndrome or group of symptoms, materially different from that observed during the course of the disease, appeared on the subsidence of the acute symptoms. These sequelae were often more annoying and resistant to treatment than the primary disease. In some cases one set of symptoms was present, in another, several independent groups. Almost every portion of the body and every organ was affected. First and foremost among symptoms was the cough. This frequently resembled whooping cough; the patient coughed continuously until exhausted. The cough often produced nothing but small quantities of tough mucus. Another cause of trouble was the existence of various painful and parasthesic areas in the chest. Pain and cold feelings between the scapulae were associated with enlarged glands or exaggerated hilum shadows. Sometimes they were lower down the back, radiating to the abdomen. Occasionally there was involvement of the diaphragmatic pleura, with tenderness at the junction of a line from the tenth costal cartilage to the parasternal line. In many cases there was associated suppurative appendicitis, with localized pain and high leukocytosis. Nausea and vomiting were present. Headache was often very persistent. Dyspnea and palpitation on exertion were common, and there was often allorhythmia. Associated symptoms were: sweating of hands, night sweats, weakness, loss of memory and energy. Fatigue was easily induced. Often there was pain over the heart. One case of aortitis following influenza was noted. Digestive disturbances were common, but indefinite, if one excepts hyperchlorhydria. Ulcer cases were prone to relapse. Albuminuria and impairment of vision were occasionally noted. A persistent subfebrile temperature was not uncommon. Disturbances of the nervous system were melancholia and sleeplessness, the latter causing much worry to the patient. Loss of taste and smell was tem-

porarily noted. Falling out of the hair was frequent. Treatment was directed to controlling the cough and for this application of a 2 per cent. solution of silver nitrate to the fauces, nasopharynx and nose was effective. Occasionally, codein, ¼ grain, with heroin, 1/10 grain, was necessary. Creosote and terebene were of value. In cases of enlarged glands sodium iodid, 2 grains, or syrup of ferrous iodid was used. Calcium iodid, 2 grains, four times a day, was valuable, particularly in the treatment of mediastinal glands with cough. In the group representing the sympathetic syndrome—weakness, sweating, etc.—the following was used: extract of the suprarenal glands, 3 grains; arsenous oxid, 1/10 grain; strychnin, 1/30 grain, and quinin sulphate, 2 grains, one capsule before meals. This combination gave good results. Patients who suffered cardiac neuroses were ordered to rest for a week or two. For the headaches of sinus origin, a cleansing alkaline solution was used. An epinephrin spray brought relief. Change of climate was the sovereign remedy. In cases of continuous or relapsing temperature, foreign protein injection, by means of government lipovaccines, was instituted with good result. For the digestive disturbance, a diet suited for hyperchlorhydria was advisable. Alcohol, in the form of red wine or whisky and water, did much to combat depression. The eyes returned to normal without treatment. The myringitis, which was often persistent, was treated best with a 2 per cent. solution of silver nitrate. Some cases seemed refractory to any treatment.

General Treatment of Influenza

Dr. Noble P. Barnes, Washington, D. C.: Patients should be kept in a light, airy room, free from dust. Antiseptic sheets should be hung over the door, and sputum cups in paper bags should be used. Roentgen-ray examination should be made and the blood pressure taken. After establishing the diagnosis, frequent examinations should be avoided. Immunizing vaccines should be used, as this disease fails to awaken body response, as shown by leukopenia and asthenia. In the beginning stages of pneumonia, the intravenous injection of typhoid protein is a safe procedure. It is contraindicated beyond the third day of the disease and in myocardial insufficiency or endocarditis. The reaction is not specific, but depends on the protein content. The patient should be put to bed with the first symptoms, and kept there until four days after subsidence of temperature. Then, if the heart and lungs are normal, he can get up. Diet could then be to full digestive capacity. Coal tar and depressing drugs should not be given. The one essential measure above all others is prolonged rest in bed.

DISCUSSION

Dr. F. M. Pottenger, Monrovia, Calif.: I do not think the tuberculous patient is susceptible to influenza. Among 100 patients in one sanatorium there was not a single case of influenza. There was no quarantine, but care was taken. As regards cold air, there is nothing to be gained by subjecting the patients to cold. They do not require an absolutely equable temperature. It can be much lower than 72. F. In regard to changes of temperature, a marked variation between morning and night is beneficial to patients and acts as a stimulus, as long as the body cells react well.

Dr. Douglas Vander Hoof, Richmond, Va.: No one has ever convinced me of the value of vaccines in a disease that does not confer immunity in the body. Influenza seems to predispose to other attacks. There may be danger of producing a negative phase by vaccine and subjecting the individual to increased sensibility. As to isolation of patients in separate rooms, certainly patients in private rooms do better than those in wards. The high mortality was due to enforced congregation of cases, with subjection to mixed infection.

Dr. Thomas F. Reilly, New York: I noticed one sign in patients with even mild influenza. They had enlargement of Steno's duct, with redness of the tip of the tongue, which stuck out like a cock's comb. Nausea was a distressing feature in the early part of the epidemic. This was well controlled with from 3 to 5 grains of chloral.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

August, 1919, **18**, No. 2

*Relationship of Convulsions in Infancy and Childhood to Epilepsy. J. L. Morse, Boston.—p. 73.
*Postinfluenzal Encephalitis. H. Heiman, New York.—p. 83.
*Constipating Qualities of Orange Juice. H. J. Gerstenberger and W. M. Champion, Cleveland.—p. 88.
*Study of Lactose, Fat and Protein Content of Women's Milk. W. Denis and F. B. Talbot, Boston.—p. 93.
*Cause of a "Sporadic" Case of Cerebrospinal Meningitis. H. L. K. Shaw, Albany.—p. 101.
*Fat Metabolism of Infants and Young Children. III. Fat in Stools of Children on a Mixed Diet. L. E. Holt, A. M. Courtney and H. L. Fales, New York.—p. 107.
Classical Case of Hemophilic Arthritis. M. G. Wilson, New York.—p. 127.
Review of Recent Literature on the New-Born. N. O. Pearce, Minneapolis.—p. 133.

Convulsions and Epilepsy.—Morse has looked up, as far as possible, the condition of the babies and children with convulsions whom he has seen, including only those cases in which the convulsions were the primary cause for his attendance and excluding all those cases in which there were any evidences of acute or chronic cerebral disease. Satisfactory reports have been obtained regarding 107 children. Morse has divided these cases into four classes: (1) cases in which the convulsions were associated with evidences of spasmophilia; (2) cases in which the convulsions occurred in the course of whooping cough; (3) cases in which there was a single convulsion or a series of convulsions at the onset of some acute disease or with an attack of acute indigestion; (4) cases in which there had been repeated convulsions during a considerable period or in which there had been repeated attacks suggesting petit mal. It is evident that convulsions which are a manifestation of spasmophilia are not likely to eventuate in epilepsy. Convulsions which occur in the course of whooping cough must always be regarded seriously, as they are quite likely to be followed by epilepsy later. Single convulsions or a series of convulsions occurring at the onset of an acute disease or with an attack of acute indigestion are less likely to be followed by epilepsy than are repeated convulsions during a considerable period or repeated attacks suggesting petit mal. Repeated attacks which would be classified as petit mal, or which suggest it, are just as likely to eventuate in epilepsy as repeated attacks of general convulsions. Nothing can be told from the nature of the early attacks as to the nature of the attacks when epilepsy develops later. When an injury to the head has directly preceded the onset of the attacks or there is no apparent cause for the attacks, epilepsy is more probable than when there is an apparent cause, such as indigestion, for each attack. The presence of an apparent cause for the attacks does not, however, exclude epilepsy. The longer the attacks have persisted, the more probable is the diagnosis of epilepsy. General impressions, which cannot be explained, have a certain value in diagnosis. Finally, and most positively, Morse says, there is no way to determine immediately when a baby or child has a convulsion, or has had repeated convulsions or repeated attacks suggesting petit mal, whether it has epilepsy or whether it will develop it later.

Postinfluenzal Encephalitis.—From his observation of eight cases Heiman differentiates three main forms, depending on the severity and the most prominent symptoms: (1) Irritable; (2) lethargic and (3) lethargic with paralyses. There is no specific therapy. Good results have been reported from lumbar punctures, but Heiman has not found this procedure of special benefit.

Constipating Qualities of Orange Juice.—Observations made by Gerstenberger and Champion on a normal infant of 10 months of age to ascertain the position as a cathartic or laxative of orange juice to an equal amount of a 10 per cent.

sugar solution composed of 6.5 per cent. glucose and 3.5 per cent. sucrose show in one period no difference between the two solutions, and in the other period a relative laxative advantage of the sugar solution over the orange juice, or better, a relative constipating ability of orange juice as compared with the effect obtained with the 10 per cent. sugar solution. During the sugar solution period anywhere from 95.71 to 96.53 per cent. of the water output went by way of the kidneys, and from 4.29 to 3.47 per cent. went through the intestines, while in the case of the orange juice from 97.15 to 97.25 per cent. of the fluid output went by way of the kidneys, and from 2.85 to 2.74 per cent. by way of the intestines. In other words, orange juice, relatively speaking, has been less laxative than a 10 per cent. sugar solution when given in doses of 15 c.c., six times in twenty-four hours. This observation confirms practical experience that orange juice in the maximum amounts ordinarily used has more of a constipating than a laxative effect, and therefore should only be used as an antiscorbutic or as a diuretic, but not as a laxative, and especially not for children who are already constipated. These observations also point to the important rôle that diuresis may play in the production of constipation, and it may be possible that some of the cases of constipation in infants supposed to be due to an abnormally long retention of the feces in the gut and a consequent too complete absorption of water in the large intestine are primarily due to the presence of a factor that causes an abnormal increase in the excretion of water through the kidneys.

Lactose, Fat and Protein Content of Woman's Milk.—Denis and Talbot found that there is a rapid increase of lactose during the first few days when colostrum changes into milk, and a further increase as lactation progresses. The reverse is true of protein which after the first rapid decrease during the change from colostrum into milk tends to further decrease during the course of lactation. After the colostrum period there does not seem to be any relation between the stage of lactation and the amount of fat in the milk. There is usually a higher percentage of lactose at the beginning of a single nursing than at the end. Although this difference may be 1 or more per cent., it is usually less. It is almost the rule for the percentage of fat to be much higher at the end of nursing than at the beginning. There is very little, if any, difference in the protein. The milks taken simultaneously from both breasts of the same woman tend to have the same composition, but often vary in respect to the percentage of fat. Toward the middle or later afternoon the volume of milk in a woman tends to diminish. The percentage of fat is, as a rule, higher at midday or midafternoon, than at other times of day.

Sporadic Case of Meningitis Due to Carrier.—Shaw cites the case of a 5 month old breast fed infant living on a farm who developed cerebrospinal meningitis. There was no record of any previous cases in the locality. On account of the isolated location of the farm it was possible to ascertain and examine every person who had come to the house for a week previous. One of the visitors was the uncle of the baby, a man, 33 years of age, who enlisted in the army in April, 1917, and went to France in August, 1917. He returned to this country in January, and fondled the baby January 28. A few days later the baby was taken ill. Examination of the spinal fluid confirmed the diagnosis of meningococcus meningitis. Postnasal cultures made from eight persons were negative except those from the soldier, and the meningococci obtained from him were agglutinated by the fluid obtained from the spinal fluid of the baby and were also proved to be identical by culture. A point of interest is that the organism still persists in this carrier four months later. He has used irrigations of all kinds and has been under the treatment of a nose and throat specialist, but the meningococci resist all bacterial procedures.

Fat Metabolism.—This study of fat metabolism presents observations on children whose diet contained a large proportion of solid food. It gives the findings as to fat percentage and distribution in the stools of a number of children receiving a mixed diet and the fat retention of these children.

American Journal of Ophthalmology, Chicago

July, 1919, **2**, No. 7

Detachment of Retina in Eclampsia and Toxemia of Pregnancy. C. A. Clapp, Baltimore.—p. 473.
Conjunctivitis Due to Food Anaphylaxis. F. A. Conlon, Lawrence, Mass.—p. 486.
Ocular Lesions Consecutive to Injections of Antityphoid Vaccine, Keratitis Herpetica Febrilis. R. P. Luna, Guatemala, C. A.—p. 488.
Effects of Faulty Cranio-Spinal Form and Alignment on the Eyes. L. Mills, Los Angeles.—p. 493.
Control of Trachoma Among Alien Labor Companies of British and American Expeditionary Forces. G. S. Derby, Boston.—p. 500.
Granuloma of Cornea. M. Feingold, New Orleans.—p. 510.
Ophthalmo-Therapeutic Ignorance Regarding Optic Atrophies. M. J. Schoenberg, New York.—p. 517.
Determination of Deviation in Squint by Priestley Smith Method, With a Modification to Insure Greater Accuracy. W. F. Holzer, Worcester, Mass.—p. 520.
Primary Sarcoma of Iris. H. Friedenwald, Baltimore.—p. 523.
Stubbornness of Some Cases of Conjunctivitis. J. Santos Fernandez, Havana.—p. 524.

American Review of Tuberculosis, Baltimore

July, 1919, **3**, No. 5

*Relationship of State and National Associations to Other Agencies in Tuberculosis Campaign. D. R. Lyman, Wallingsford, Conn.—p. 257.
Need for Broader Program in Campaign Against Tuberculosis. G. T. Palmer, Springfield, Ill.—p. 268.
*Industrial and Agricultural Community for Arrested Cases of Tuberculosis. H. A. Pattison, New York.—p. 276.

Cooperation in Tuberculosis Campaign.—One of the suggestions made by Lyman in this paper is that the health record of every man be filed with the United States Public Health Service and with the state board of health of his own state. Lyman seems to be convinced that in the near future we will adopt some form of military service for all young men so that we may have all of them as they reach the age of 18 under military training for six months or more. From the standpoint of national health that would mean a chance for a complete physical study and, if need be, corrective physical training during this period for every young man.

Industrial Community for Arrested Tuberculosis Cases.—The proposition offered by Pattison is the development of industries around a community for the sake of that community, which is to be made up chiefly of arrested cases of tuberculosis among soldiers, sailors and civilians. Those soldiers and sailors who are substandard physically because of other forms of disability than tuberculosis would not be debarred, but the totally disabled, epileptic or mentally deranged could not be received. There would also be perfectly well people occupying executive positions or placed in jobs such as were required to keep processes going. The community should be complete within itself, yet in immediate touch with other neighboring villages and cities. Topographically, it should be well situated on elevated, hilly ground with several acres of woodland, and, if possible, with an active but small river winding through it. The tract should be located within 100 or 200 miles of some large city and not in an isolated corner of a far Western state. It should be on a line of railroad and preferably a main line, with ready accessibility to raw materials and markets. The village proper should be laid out according to modern ideas of town planning to care for 500 or 600 population almost immediately, with possibilities for expansion to 4,000. Its general features, in Pattison's opinion, should conform to those of other American towns rather than to English garden cities. While the homes should be diverse in design, the architectural *tout ensemble* should be harmonious and artistic. The department of health should be a model in every respect and be given a place of honor coequal in importance with the industrial phases of the community. Conservation and restoration of man power would be give first consideration. There would be diagnostic, pathologic and research laboratories. The director of the department would be given as many medical assistants and public health nurses as the growth of the community required. Every person, man, woman or child, who came to take up residence would be given a complete physical examination, including stereoscopic chest plates and biologic tests. Periodic reexaminations and special examinations when indicated by the appearance of symptoms would preserve a life history of the "human

machine," making it possible to reduce greatly the morbidity and mortality rates in comparison with other industrial towns of like size. Under such conditions an unusual opportunity would be offered for the development and application of psychologic, trade, efficiency and fatigue tests. The population would be drawn largely from the sanatoriums of neighboring states. School training courses would prepare men and women to give occupational therapy and prevocational training in sanatoriums thus sending forth missionaries to prepare sanatorium patients for the colony.

Archives of Neurology and Psychiatry, Chicago

Aug. 1, 1919, **2**, No. 2

Physician and Human Conservation. J. H. McBride, Pasadena, Calif. —p. 149.
*Cerebrospinal Fluid in Experimental Compression of Spinal Cord. J. B. Ayer, Baltimore.—p. 158.
Clinical Survey of 415 Instances of Brain, Spinal Cord and Peripheral Nerve Injuries, as Seen in Overseas Wounded. J. C. Fisk, and S. Frock, New York.—p. 165.
*Colloidal Gold Reaction in Four Hundred and Ninety-Eight Psychiatric Cases. E. Rawlings, Mendocino, Calif.—p. 180.
*Role of Pituitary Gland in Epilepsy. B. R. Tucker, Richmond, Va. —p. 192.
*Resemblance of Sensory Symptoms of Postdiphtheritic Ataxia to Those Seen in the Cord Changes of Severe Anemia. G. Wilson, Philadelphia.—p. 201.
Diagnosis of "War Psychoses." G. E. McPherson, Medfield, Mass., and L. B. Hohman, Baltimore.—p. 207.

Experimental Compression of Spinal Cord.—The experimental work reported on by Ayer was done on cats. The results showed that paraffin may be injected into the epidural space in cats, with resultant compression of the cord and symptoms of incomplete transverse myelitis. Spinal fluid obtained from below the area of compression usually shows marked increase in protein content, at times is yellow and clots spontaneously. The greater the amount of protein the more likely is the fluid to clot. Fluids obtained from the subarachnoid space above the area of compression are invariably normal or nearly normal. The pathologic fluids obtained are entirely comparable with (1) the *syndrome de coagulation massive et de xanthocromie* of Froin, and (2) the syndrome of Nonne, both characteristic of spinal cord compression in man.

Colloidal Gold Reaction in Psychoses.—An analysis is made by Rawlings of the colloidal gold reaction in 498 cases of various psychoses in which there was suspected a nervous syphilis from the clinical findings of pupillary changes, exaggerated or lost reflexes, speech defects, histories of early cardiovascular involvement or apoplexies; with miscarriages, stillbirths, defective mental development or more frank syphilitic manifestations in the immediate relations. No case was punctured which did not show either a positive Wassermann reaction of the serum with suggestive neurologic symptoms, or neurologic symptoms which made dependence on a negative serum inadvisable. The following results were obtained: One hundred and three patients gave paretic curves with positive Wassermann reactions of either serums or spinal fluids, or both; ten gave suggestive curves of incipient paresis with negative Wassermann reactions of serums and spinal fluids; fifty-three gave syphilitic curves with positive Wassermann reactions of either serums or spinal fluids, or both; 118 gave syphilitic curves with negative Wassermann reactions of serums and spinal fluids; 209 patients gave negative gold reactions, fourteen of whom showed positive Wassermann reactions of the serum and three positive Wassermann reactions of the spinal fluids; five gave atypical curves, several of these being treated cases. Rawlings concludes, therefore, that the spinal fluid of cases of dementia paralytica causes a quite characteristic curve with the colloidal gold solution which is of such frequent occurrence as to be diagnostic. In seven cases the diagnosis was confirmed by necropsy. The spinal fluid of taboparetics may normally give syphilitic curves or rather low paretic curves. Cerebrospinal syphilis gives a curve which may be considered diagnostic. Syphilitic curves with negative Wassermann reactions of serums and spinal fluids may be obtained in cerebrospinal syphilis, the reaction not necessarily being due to a dialyzable substance other than syphilitic. The gold curve is of value in clearing up the etiology of old arteriosclerosis with negative Wassermann reactions; necropsies having demonstrated a syphilitic type of vascular lesion in cases giving syphilitic curves and a simple senile degeneration of the vessels in cases giving negative gold reactions. It is of interest that five cases of Huntington's chorea gave negative gold reactions, one of which, however, demonstrated pathologically an inactive moderate tabetic involvement of the lumbar regions. The syphilitic curve may be of value in clearing up the etiology of mental deficiencies after an active syphilitic process has ceased and antibodies have disappeared from the body fluids. The globulin reaction is rather uniformly strongly positive in paretics and a fair proportion of syphilitics, but there appears to be no definite relationship between the curve and the strength of the reaction.

Pituitary Gland in Epilepsy.—Tucker believes that there is a definite relation between the undersecretion of the pituitary gland and a group of periodic convulsive attacks usually termed epilepsy; that this group is divided into a chronic hypopituitary type and a transitional hypopituitary type by both clinical and roentgenographic evidence; and that pituitary gland feeding has a markedly beneficial effect occasionally leading to cure.

Postdiphtheritic Ataxia.—The three cases reported by Wilson are of interest from the type of sensory loss which they show, the loss of sensation being exactly similar to that seen in the combined sclerosis of pernicious or severe secondary anemia. The subjective symptoms which were complained of in these cases were of the same character that is so common in anemia. All three patients had paresthesias in the hands and feet, and all showed a loss or marked impairment of the sense of position and of vibration; in two of the cases with preservation of touch sense there was impairment of the ability to recognize the two points of a compass. Wilson believes he is justified in placing the lesions which account for the sensory loss in these cases in the posterior columns of the cord and not in the peripheral nerves.

Arkansas Medical Society Journal, Little Rock

July, 1919, **16**, No. 2

Dysmenorrhea. O. Wilson, Little Rock.—p. 47.
Methyl Alcohol Blindness. H. H. Rightor, Helena, Ark.—p. 49.
Intestinal Obstruction. E. L. Beck, Texarkana.—p. 51.

Boston Medical and Surgical Journal

July 31, 1919, **181**, No. 5

Energy Requirements of Children from Birth to Puberty. Shattuck Lecture. F. G. Benedict, Boston.—p. 107.
Nutrition Clinics and Classes: Their Organization and Conduct. W. R. P. Emerson, Boston.—p. 139.

Bulletin of Medical and Chirurgical Faculty of Maryland, Baltimore

July, 1919, **12**, No. 1

Influence in Building up Medical and Chirurgical Faculty. H. Woods, Baltimore.—p. 2.
Osler's Influence on American Medical Libraries. J. Ruhrāh, Baltimore.—p. 5.
Book and Journal Club of Medical and Chirurgical Faculty of Maryland. J. A. Chatard, Baltimore.—p. 11.
Osler's Influence on Library of Medical and Chirurgical Faculty of State of Maryland. M. C. Noyes, Baltimore.—p. 12.
Osler's Influence on Other Medical Schools in Baltimore and His Relation to Medical Profession. E. N. Brush, Baltimore.—p. 15.
Dr. Osler as a Citizen and His Relation to Tuberculosis Crusade in Maryland. H. B. Jacobs, Baltimore.—p. 18.

Journal of Experimental Medicine, Baltimore

August 1, 1919, **30**, No. 2

*Etiology of Yellow Fever. VII. Demonstration of Leptospira Icteroides in Blood, Tissues, and Urine of Yellow Fever Patients and of Animals Experimentally Infected. H. Noguchi, New York.—p. 87.
*Id. VIII. Presence of Leptospira in Wild Animals in Guayaquil; Relation to Leptospira Icterohaemorrhagiae and Leptospira Icteroides. H. Noguchi, New York.—p. 95.
*Intestinal Obstruction. II. Factors Involved in Production and Absorption of Toxic Materials from Intestine. L. R. Dragstedt, C. A. Dragstedt, J. T McClintock, and C. S. Chase, Iowa City, Iowa.—p. 109.

*Study of Pneumococci Reacting with Antipneumococcus Serums of Types I, II and III; Mutation of One Strain. B. C. Clough, Baltimore.—p. 123.
*Studies of Oxygen in Venous Blood. V. Determinations on Patients with Anemia. C. Lundsgaard, Denmark.—p. 147.
Streptococci of Equines. F. S. Jones, Princeton, N. J.—p. 159.

Etiology of Yellow Fever.—Examinations of fresh blood from yellow fever patients by means of the dark field microscope, made by Noguchi in more than twenty-seven cases, revealed in three cases the presence of *Leptospira icteroides*. The injection of the blood into guinea-pigs from two of the three positive cases induced in the animals a fatal infection, while the blood from the third positive case failed to infect the guinea-pigs fatally. Stained blood film preparations from the corresponding cases were also examined, but the percentage showing the leptospira in the blood was no greater than that found by examination in the fresh state with the dark field microscope. Examinations of the urine by dark field microscope and by inoculation into guinea-pigs were totally negative in thirteen cases, including many convalescents, but in one case one of the guinea-pigs inoculated with 10 c.c. of the urine came down on the fifteenth day with suggestive symptoms (suspicion of jaundice, and some hemorrhagic and parenchymatous lesions of the lungs and kidneys). This specimen showed no leptospira by dark field examination. In experimental infection of guinea-pigs with *Leptospira icteroides* the blood became infective in many instances forty-eight hours after inoculation, and was always infective after seventy-two hours. The liver and kidney become infective simultaneously with the blood. Detection of the organism by means of the dark field microscope has seldom been accomplished before the fifth day. The organisms are most abundant on the sixth or seventh day, but become fewer or completely disappear before death. In the meanwhile the number of organisms increases in the liver and kidney, from which they disappear as the jaundice and other symptoms become aggravated. When death occurs these organs seem to have lost most of the leptospira, and positive transfer by means of them is less certain. At the later stage of the disease the blood is often free from the organisms and ceases to be infective.

Etiology of Yellow Fever.—By the inoculation of guinea-pigs intraperitoneally with the emulsions of kidneys from wild rats and mice captured in Guayaquil, Noguchi found that 67 per cent. of the wild rats tested harbored in their kidneys a leptospira which produced in guinea-pigs symptoms and lesions identical with those produced by *Leptospira icterohaemorrhagiae* derived either from patients suffering from infecious jaundice in Japan or Europe or from wild rats caught in New York. Guinea-pigs inoculated with killed cultures of the Guayaquil strains of leptospira proved to be resistant to a subsequent infection with heterologous as well as homologous strains of *Leptospira icterohaemorrhagiae*. It is concluded, therefore, that the leptospira isolated from the kidneys of wild rats and mice in Guayaquil belongs to the group of *Leptospira icteriohaemorrhagiae* and differs from *Leptospira icteroides* in its immunity reactions.

Intestinal Obstruction: Absorption of Toxic Material.—This study was undertaken by the Dragstedts and others to determine the factors involved in the absorption of toxic materials from the intestine. It was found that if isolated intestinal loops were washed with water and ether previous to closure many animals survived the operation and never displayed any toxic symptoms, and that these loops when subsequently removed and examined contained great numbers of bacteria. Experiments made to determine whether the growth of bacteria and the production of the usual toxic substances in closed intestinal loops were prevented by the previous use of antiseptics established the fact that this is impossible even in a short piece of intestinal tract. They indicate that the part played by ether is not that of a bactericide and that it does not markedly inhibit the production of toxic materials in intestinal loops. The absorption of these toxic substances is for some reason prevented. It is possible for many times the lethal dose of these poisons to remain in closed loops of the jejunum or colon without the production of toxic symptoms. Apparently, simple astringents with no germicidal properties are just as effective in preventing the symptoms of toxemia in dogs with closed intestinal loops as are the antiseptics. It was evidently the astringent properties of the ether and the other chemicals rather than their bactericidal properties that account for the results produced. It was also determined that the mucosa of the alimentary tract does not elaborate an internal secretion which is necessary to life, or a secretion which could be disturbed by the conditions of acute obstruction so as to account for the symptom complex of that condition. The substances responsible for the toxemia in acute obstruction are produced by the action of intestinal bacteria on proteins or their split products. An injury to the intestinal mucosa, particularly that resulting from disturbances of the blood supply to the intestine, greatly facilitates the absorption of these poisons.

Studies on Pneumococci.—Clough reports the results of a study of nine strains of pneumococci agglutinating with antipneumococcus serums of all three types (Nos. I, II, III). Seven of the strains were the cause of serious or fatal infections in human beings. The virulence of the strains varied greatly. In general, the strains were found to be serologically distinct, though some interrelationships existed between several strains. A mutation occurred in one of the strains, while it was under observation. On isolation this strain had the cultural reactions of a typical pneumococcus, and had the phagocytic and agglutinative reactions of an atypical Type II. After six months' cultivation on blood agar its serologic reactions changed, and it became actively phagocyted and agglutinated in antipneumococcus serums of Types I, II, III. Its cultural characteristics also changed, and it became bile insoluble, did not ferment inulin, and caused precipitation in glucose ascitic fluid agar. At this time it caused an intense green discoloration at the base of the blood agar slants around the water of condensation. By repeated animal passages this strain was three times made to revert abruptly to its original form (atypical Type IIa), both in cultural and serologic reactions. An immune serum was prepared to each form of the strain, and each serum acted strongly on the homologous form, but was without action on the heterologous form of the strain. Clough believes that this mutation suggests that these pneumococci reacting with all three types of antipneumococcus serums may represent primitive, relatively undifferentiated forms from which the fixed types may have arisen.

Oxygen in the Venous Blood.—Clinical experience agrees with the experimental results obtained by Lundsgaard; a bodily and mentally resting anemic patient usually does not show any marked reaction from the circulation, until the hemoglobin percentage has fallen below 30. In patients whose hemoglobin is below that value an ipcreased pulse rate and palpitation of the heart even at rest is evidenced.

Journal of Infectious Diseases, Chicago

August, 1919, **25**, No. 2

Antigenic Properties of Proteoses. E. B. Fink, Chicago.—p. 97.
*Effect of Potassium Iodid on Experimental Sporotrichosis. D. J. Davis, Chicago.—p. 124.
*Microscopic Appearances in Ulceromembranous Tonsillitis (Vincent's Angina). R. Tunnicliff, Chicago.—p. 132.
Differentiation and Distribution of Paratyphoid-Enteritidis Group. VI. Avian Paratyphoid Bacilli: A Comparative Study of B. Pullorum and B. Sanguinarium. F. W. Mulsow, Chicago.—p. 135.
Incidence of Meningococcus Carriers in a Naval Training Station During 1918. J. T. Short, Great Lakes, Ill.—p. 163.
Study of Dreyer's Agglutination Technic in the Army. A. G. Eggerth, France.—p. 166.
*Rapid Method for Preparing Antigens from Normal Heart Muscle. E. E. Ecker and K. Sasano, Cleveland.—p. 174.
*Experimental Gas Gangrene. The Protection by Antiserum and Antiserum Mixtures. M. Nevin, France.—p. 178.

Potassium Iodid in Experimental Sporotrichosis.—The experiments reported on by Davis indicate that potassium iodid given to animals for eight days previous to inoculation with sporotricha will have no effect in inhibiting or preventing the infection. Also, when given simultaneously and for a week following the inoculation, the infection appears to continue without interruption. When the potassium iodid is continued indefinitely, the lesions heal, becoming hard and

contracted, but the sporotricha remain alive in their centers for a long time and apparently are unable to disseminate. Lesions following inoculation under the skin usually progress, but if potassium iodid is administered they gradually recede; such lesions can be inspected from day to day and the healing process observed. By reinoculating such an animal, even when receiving potassium iodid, the new infection will progress for a period of two or three weeks and then recede so that it is possible to have in one and the same animal one lesion which is healing under the influence of potassium iodid and another which is progressing. Evidently the potassium iodid does not act in a direct way on the sporotricha, but indirectly through the agency of tissue proliferation and processes incidental thereto. From the experiments it seems clear that potassium iodid acts in such a way as to stimulate the healing process without inhibiting the development of the infecting organism. In other words, its action is curative and not preventive.

Ulceromembranous Tonsillitis.—The ulceromembranous tonsil described in Tunnicliff's report was removed during life, and the removal proved an effective method of limiting the infection. The case was clinically typical of Vincent's angina. Smears showed large numbers of fusiform bacilli and long spiral organisms with wide undulations. Sections of the tonsil showed fusiform bacilli and spiral organisms in enormous numbers in the zone separating the external necrotic epithelium and living tissue. A considerable number were invading the normal tissue, the spirillar forms being the more abundant and in advance of the bacilli. These organisms were apparently not associated with cocci or other bacteria at the line of advancing necrosis.

Antigen from Heart Muscle.—According to Ecker and Sasano suitable antigens can be made by extracting normal heart tissues for a period of from one to three hours with boiling alcohol in a reflux condenser. The value of these antigens compares favorably with those extracted by the usual methods. A primary extraction of the dried tissues with ether results in a slight loss of their fixing power, but yields extracts containing less anticomplementary substances.

Experimental Gas Gangrene.—When *Vibrion septique* and *B. edematiens* (*B. bellonensis*) are present in mixed infections, Nevin claims that the prophylactic use of the specific serums even when diluted by another serum, is effective. Neither the *B. welchii* antitoxin nor the *B. welchii* (perfringens) antimicrobial serum are of any practical value in the prophylaxis of gas gangrene caused by a mixed infection due to several anaerobic bacilli, such as is commonly found in war wounds today. No accurate investigations of the amount of antitoxin contained in the antiperfringens (*B. welchii*) serum were made, and it is therefore impossible to say whether the protection afforded in pure *B. welchii* infections by the antimicrobial serum was due to the antitoxic principle contained in it, or to other antibodies present, or to a combination of the two. Further studies will be necessary to determine whether a serum of the highest potency can be produced by the inoculation of a sterile filtrate, producing a strict antitoxin, or by the inoculation of whole cultures, producing an antimicrobial serum.

Kentucky Medical Journal, Bowling Green

August, 1919, **17**, No. 8

Possibilities of Antivenereal Work. G. H. Day, Louisville.—p. 300.
Functions of State Drug Inspector. C. S. Port, Lexington.—p. 302.
Id. J. W. McFarlin, Bowling Green.—p. 304.
County Jail. W. H. Oates, Mobile, Ala.—p. 305.
*Sliding Hernia of Urinary Bladder: Report of Two Cases. L. Frank, Louisville.—p. 309.
*Cancer of Colon. J. G. Sherrill, Louisville.—p. 312.
Intussusception in a Woman Three Days After Delivery: Internal Hydrocephalus in a Boy Aged Eleven Years. E. S. Allen, Louisville.—p. 313.
Fatal Laryngeal Edema Following Influenza. H. E. Tuley, Louisville.—p. 315.
Case of Sarcoma of Orbit. A. O. Pfingst, Louisville.—p. 316.
Treatment of Infected Comminuted Compound Fractures. I. A. Arnold, Louisville.—p. 318.
Operation for Thyroid Tumor: Case Report. J. G. Sherrill, Louisville.—p. 323.
Malignant Tumor of Thyroid. S. Graves, Louisville.—p. 325.
Acute Manic Depressive Psychosis; Report of Case. W. E. Gardner, Louisville.—p. 326.
Amebic Infection with Liver Abscess. H. E. Tuley, Louisville.—p. 328.
Fibrosarcoma of Mammary Gland. S. Graves, Louisville.—p. 329.

Sliding Hernia of Urinary Bladder.—These are the only two cases of the kind Frank has seen. He suggests that the greatest care be always exercised during herniotomy, particularly for hernia of the inguinal type, to ascertain the presence or absence of a sliding viscus in the hernial sac. In certain cases where a urinary or fecal fistula has developed after herniotomy, quite likely a sliding hernia of the intestine or bladder was present which was unrecognized during the operation and injury thus resulted. Unless the pathology be recognized definitely during the operation, the sliding viscus may be irreparably damaged during dissection or separation of adhesions.

Cancer of Colon.—In August, 1917, Sherrill removed an adenocarcinoma of the descending colon reuniting the divided ends of the intestine by end to end anastomosis. There is as yet no evidence of recurrence.

Maine Medical Association Journal, Portland

July, 1919, **9**, No. 12

Proceedings of Sixty-Sixth Annual Meeting of Maine Medical Association.—p. 329.

Medical Record, New York

August 2, 1919, **96**, No. 5

Sixty Years of Medicine. A. Lambert, New York.—p. 177.
Some Facts and Principles of Dietotherapy. E. E. Cornwall, Brooklyn.—p. 181.
Focal Infection as a Cause of Painful Heel. Report of Case. S. Epstein, New York.—p. 187.
Foreign Body (Rectal Syringe Tip) in the Uterine Cervix. L. F. Herz, New York.—p. 188.
Open Safety Pin Swallowed by an Eight Months Old Child and Passed Through the Rectum After Four Days. S. Weiss, New York.—p. 189.
Extraction of War Projectiles from Thorax. R. le Fort. France.—p. 190.
Immediate Closure of War Wounds. R. Gregoire, France.—p. 195.

Mental Hygiene, Concord, N. H.

April, 1919, **3**, No. 2

Mental Disease and Delinquency. Report of Special Committee of New York State Commission of Prisons. V. V. Anderson, Boston.—p. 177.
Responsibilities of Universities in Promoting Mental Hygiene. C. M. Campbell, Baltimore.—p. 199.
Psychiatric Thread Running Through All Social Case Work. M. C. Jarrett, Boston.—p. 210.
Mental Disorder Considered as a Psychologic Reaction. M. A. Harrington, New York.—p. 220.
Mental Disease in Families. A. Myerson, Boston.—p. 230.
How to Avoid Spoiling the Child. L. F. Barker, Baltimore.—p. 240.
Mental Diseases in New York State During the War Period. H. M. Pollock, New York.—p. 253.
Mental Tests. S. I. Franz, Washington, D. C.—p. 258.
Drunkenness as Seen Among Women in Court. V. V. Anderson and C. M. Leonard, Boston.—p. 266.

Modern Medicine, Chicago

July, 1919, **1**, No. 3

Rise of Social Medicine. R. Sand, Brussels, Belgium.—p. 189.
What is the American Standard of Living? R. Meeker, Washington, D. C.—p. 193.
Brass Poisoning; Symptoms and Diagnosis. R. P. Albaugh, Columbus, Ohio.—p. 202.
New Developments in Industrial Medicine and Its Future. H. E. Mock, Chicago.—p. 203.
Employment Management and Industrial Medicine. O. P. Geier, Cincinnati.—p. 213.
Protecting the Health of Soft Coal Miners by Prevention of Disease. E. R. Hayhurst, Columbus, Ohio.—p. 216.
Housing and Health. J. H. McBride, Pasadena, Calif.—p. 225.
Sickness Costs and the Family Budget. L. K. Frankel, New York.—p. 233.
What the Social Worker Learns from the Psychiatrist about Her Problem Children. J. Taft, Philadelphia.—p. 240.
National Board of Medical Examiners. W. L. Bierring, Des Moines, Iowa.—p. 246.
Physical Therapy in Functional Disease. J. W. Bowler, Hanover, N. H.—p. 249.
Need of Special Classes for Children with Defective Sight. J. Green, Jr., St. Louis.—p. 257.
Law for the Doctor; Physician's Liability for Acts of his Partner. L. Childs, Indianapolis.—p. 264.
Diabetes Among Jews; Its Cause and Prevention. A. A. Epstein, New York.—p. 269.

New York Medical Journal

August 2, 1919, **110**, No. 5

War Neuroses as Observed in Army Neurologic Hospitals at the Front. J. H. W. Rhein, Philadelphia.—p. 177.
*Treatment of Lymphatic Leukemia with Benzyl Benzoate. F. G. Haughwout and M. A. Asuzano, Baguio, P. I.—p. 180.
Influenza and Bronchopneumonia at Camp Lewis. Study of One Hundred and Fifty-Two Necropsies. W. J. Kerr, San Francisco, H. K. Berkley, Los Angeles and T. H. Coffen, Portland, Ore.—p. 184.
Medical Treatment of Gallbladder Affections. S. Weiss, New York. —p. 187.
*Intrathoracic Goiter, Showing a Thyrotoxicosis. J. H. Leiner, New York.—p. 190.
Practical Application of Our Knowledge of Disease and Defects of School Children. M. Glasgow, New York.—p. 191.
Treatment of Joint, Bone, Nerve and Muscle Injuries by Mechanical Means. J. C. Seal, New York.—p. 195.
Sodoku or Rat Bite Fever. C. G. Cumston, Geneva, Switzerland. —p. 197.

Treatment of Lymphatic Leukemia with Benzyl Benzoate.—Haughwout and Asuzano report on the use of benzyl benzoate in a case of lymphatic leukemia in which the disease had been of at least two or three years' standing. The results were good but the authors make no claim for the therapeutic efficacy of the drug, except that it is evidently free from the evil tendencies and can be administered indefinitely and with effectiveness to a patient in an advanced stage of the disease, without deranging the alimentary tract or kidneys. The initial dose of benzyl benzoate in this case was 10 drops of the 20 per cent. alcoholic solution, in water, three times a day, after meals. Later the dose was reduced to 5 drops, but when former symptoms recurred the original dose of 10 drops was resumed. Improvement in all the symptoms followed; the patient gained in strength, eats well, sleeps well and is free from discomfort or pain.

Intrathoracic Goiter, Showing a Thyrotoxicosis.—In the case cited by Leiner, Forchheimer's treatment of quinin hydrobromate and ergotin resulted in improvement, but when it was stopped a relapse occurred, both subjectively and objectively. When the patient received ovarian extract some improvement was noticed in regard to her hot flushes and tremor. Then she was given 5 grains of thymus extract, three times a day. No exacerbation of her thyrotoxic symptoms was observed.

South Carolina Medical Association Journal, Greenville

July, 1919, **15**, No. 7

Development of Bureau of Child Hygiene of State Board of Health of South Carolina. R. A. Dodd, Columbia, S. C.—p. 496.
Lethargic Encephalitis. J. G. Eaddy, Johnsonville, S. C.—p. 500.
Qualifications of a Successful Health Officer and the Essentials of Good Service. M. M. McCord, Rome, Ga.—p. 502.

Southwest Journal of Medicine and Surgery, El Reno, Okla.

July, 1919, **27**, No. 7

Pathologic Reasons In Conjugated Syphilis of Nervous System. S. G. Burnett, Kansas City, Mo.—p. 141.
Blood Transfusion. F. H. Clark, U. S. Army.—p. 149.

Tennessee State Medical Association Journal,

July, 1919, **12**, No. 3

Suspension Laryngoscopy; Relation to Modern Surgery of Larynx. R. C. Lynch, New Orleans.—p. 77.
Keratitis. O. Dulaney, Dyersburg, Tenn.—p. 80.
Ocular Manifestations of Focal Infection. M. M. Cullom, Nashville. —p. 84.
Medical Books and Doctors of Olden Time. I. A. McSwain, Paris, Tenn.—p. 92.
Achylia Gastrica. O. S. Warr, Memphis.—p. 96. (Abstracted in THE JOURNAL, April 26, 1919, p. 1250.)
Practical Demonstration of Vestibular Tests from an Otologist's Standpoint. L. Levy, Memphis.—p. 101.
Present Status of Wassermann Blood Test. W. F. Glenn, Nashville. —p. 105.
The Heart. O. N. Bryan, Nashville.—p. 106.

U. S. Naval Medical Bulletin, Washington, D. C.

July, 1919, **13**, No. 3

Preventive Medicine at Training Camps and Stations. Outline of a Working Plan for the Study of Epidemics. C. E. Riggs, U. S. Navy.—p. 395.
With Marines in France. General Operations of the Regiment. F. E. Locy, U. S. Navy.—p. 417.
Bone Grafts. E. M. Foote, U. S. N. R. F.—p. 433
Internal Derangements of Knee Joints. C. F. Painter, U. S. N. R. F. —p. 442.
Clinical Manifestations of Tropical Sprue. E. J. Wood, U. S. N. R. F.—p. 449.
Methods of Isolation and Cultivation of Pfeiffer's Bacillus: A Review. D. G. Richey, U. S. N. R. F.—p. 453.
Nervous Element in Aviation. G. U. Pillmore, U. S. Navy.—p. 458.
Administration of the U. S. Hospital Ship "Solace." E. E. H. Old, U. S. Navy.—p. 478.

Wisconsin Medical Journal, Milwaukee

July, 1919, **18**, No. 2

Workmen's Compensation and Physician. F. M. Wilcox.—p. 43.
Plea for More Aggressiveness in Treatment of Chronic Gastric Ulcer and Gastric Cancer. K. Doege, Marshfield.—p. 49.
Overtreatment of Neurosyphilis. D. W. Roberts, Milwaukee.—p. 54.
Fluctuations of Refraction in Developing Cataract. C. Zimmermann, Milwaukee.—p. 57.
Hydronephrosis: Diagnosis and Treatment. J. C. Sargent, Milwaukee. —p. 60.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Japan Medical World, Tokyo

July 6, 1919, No. 290

*Therapeutic Efficacy of Antitetanus Serum; Site of Injection. R. Kobayashi.

Therapeutic Efficacy of Antitetanus Serum.—Comparative studies of the therapeutic administration of antitetanus serum by intravenous and subarachnoid injection were made by Kobayashi. In the treatment of the experimental tetanus in the rabbit which had received a dose of the toxin sufficient to kill it in from 5 to 8 days, all the animals that had been given the serum within twenty-four hours after the injection of the toxin into the vein recovered. There was, however, a difference between those animals that were given the serum into the vein and those injected into the subarachnoid cavity, for with the former the minimum therapeutic dose was ten times as large as that with the latter. When the toxin was injected into the subcutaneous tissue instead of into the vein, and the animal was given the serum within twenty-four hours, all the animals recovered, but this time the minimum therapeutic dose with the intravenous administration was 300 times as large as that with the subarachnoid administration. The minimum therapeutic dose with the cases that were given the serum into the subarachnoid cavity after twenty-four hours from the injection of the toxin either intravenously or subcutaneously was just the same, but the intravenous administration of the serum differed within a wide range, for the subcutaneous injection of the toxin was just ten to thirty times as large as that with the intravenous injection of the toxin. The immune serum was found powerless when it was given either subarachnoidally or intravenously after forty-eight hours from the injection of the toxin intravenously. By the subarachnoid administration of the immune serum forty-eight hours after the injection of the toxin subcutaneously, a little efficacy was found to be manifested.

July 13, 1919, No. 291

Phagocytosis of Citrated Blood of Lepers. Y. Hayashi.
*Local Anesthesia of Uterus. Prof. Ando.

Local Anesthesia of Uterus.—By means of the vaginoscope the orifice of the uterus is exposed and the anesthetics are injected with a 5 gram syringe at posterior, anterior and bilateral points along the border of the cervix and the vaginal wall. The needle is driven toward the base of the cavity for a distance of 2 mm. and the injection is made very slowly. The operation is begun in about five minutes after the injection. By this method all the operations on the mucous membrane of the vagina and the uterine cavity may be carried out without applying general anesthesia.

Medical Journal of Australia, Sydney

June 14, 1919, **1**, No. 24

*Three New Amputations of Foot, Each Conserving the Calcaneal Tread. C. E. Corlette.—p. 479. To be cont'd.
*Three Cases of Aplastic Anemia. G. E. Rennie.—p. 485.

Amputation of Foot Conserving Calcaneal Tread.—One of the three operations devised by Corlette was done on a boy whose leg had to be amputated at the junction of the middle and lower third. The whole of the foot in front of the talus on the other side was crushed. The mangled mass was cut away with every possible care to retain viable tissue. There was no material for an upper flap, and there was not enough sole left to cover the surface exposed. With a pair of large bone shears Corlette made a horizontal section of the talus and removed the distal fragment. Next, he did a subcutaneous division of the Achilles tendon. Then he cut through the base of the sustentaculum tali, and cleared the soft tissue from the top and sides of the calcaneus. The shears were used to make a horizontal section of the calcaneus, the upper convex surface being removed as far back as the blades could reach, and a plane surface was left. The residual distal part of the calcaneus was then pushed forward as far as possible; the front of it, including the greater process, was sheared off, and the remaining fragment was fitted in its advanced position beneath the talus, with a view to getting bony union. No wiring was attempted. In point of fact, the primary intention of all this was to get a flap and this was successfully accomplished. The removal of the anterior portion of the calcaneus gave length to the plantar flap, and the horizontal section of the talus and the calcaneus, with removal of bone, shortened the vertical measurement, lessening the distance the flap had to reach. The net result of the procedures undertaken was a very satisfactory viable covering for the gap in front, with a well elevated situation for the cicatrix, away from all risk of pressure. The result was perfect.

In a second case this procedure was altered somewhat. Corlette first removed all that portion of the foot anterior to the mediotarsal joint, leaving the skin intact at the line of demarcation. Horizontal section of the head of the talus was done by an osteotome. The Achilles tendon was cut subcutaneously. The sustentaculum tali was cut off and removed. The various ligamentous attachments of the calcaneus to the talus were divided, and the under part of the talus was removed further back. The calcaneus was horizontally bisected just above the level of the greater process in front. The section of the calcaneus was carried back near to the insertion of the Achilles tendon so that the upper fragment included the smooth surface of bone above the insertion of the tendon. The greater process of the calcaneus, i. e., the part anterior to the groove which provides attachment for the interosseous ligament was removed. The calcaneus was then pushed forward as far as it would go beneath the talus. The skin flaps were cleared of granulation tissue, shaped and sutured. The result in this case was also good.

Three Cases of Aplastic Anemia.—Rennie suggested that aplastic anemia in young persons is the result of the exhaustion of function of a bone marrow congenitally defective in power of endurance, while in older persons it is the result of some poison or poisons which, acting on the bone marrow, destroys its function and so leads to the death of the patient. A pathologic hemolysis as an essential part of this syndrome is not proved.

June 21, 1919, **1**, No. 25

Problems in Connection with Venereal Disease Act, 1918. L. E. Ellis. —p. 501.
*Three New Amputations of Foot, Each Conserving Calcaneal Tread. C. E. Corlette.—p. 502. To be cont'd.

June 28, 1919, **1**, No. 26

Present State of Hospital Roentgenographic Departments in New South Wales. J. G. Edwards.—p. 525.
Three New Amputations of Foot, Each Conserving Calcaneal Tread. C. E. Corlette.—p. 526. To be cont'd.

July 5, 1919, **2**, No. 1

Army Medical Service and Prevention of Venereal Disease. B. T. Zwar.—p. 2.
Army Medical Service: Prophylaxis and Treatment of Venereal Disease. A. E. Morris.—p. 3.
Three New Amputations of Foot, Each Conserving Calcaneal Tread. C. E. Corlette.—p. 8.

New Amputations of Foot Conserving Calcaneal Tread.—In this article Corlette continues his discussion of his operations and describes the technic in detail.

Siamese Red Cross Medical Journal, Bangkok

December, 1918, **1**, Pt. 3

Uncinariasis. M. E. Barnes.
Leprosy of Eye. H. Campbell.
Tropical Ulcer. L. Robert.

Archives Médicales Belges, Liége

March, 1919, **72**, No. 3

*Meningeal Hemorrhage after Contusion of Skull. G. Guillain.—p. 237.
*Physiotherapy of Paralysis of Peripheral Nerves. L. Stouffs.—p. 250.
*Pneumothorax without Symptoms. H. Fredericq.—p. 264.
The Medicine of Aviation. J. Voncken.—p. 270.
Electrons and Rays in Therapeutics. M. Van de Maele.—p. 301.

Meningeal Hemorrhages After Contusion of Skull.—Guillain declares that meningeal hemorrhage is much more common than generally recognized with simple contusion of the skull or apparently mere scalp wounds. He describes thirteen cases from his own experience. The symptoms were very vague, but lumbar puncture cleared up the diagnosis and aided in recovery. Even where there is a hematoma in connection with the meningeal hemorrhage it may subside completely under repeated lumbar puncture and be resorbed spontaneously. In one of his cases pronounced aphasia from this cause retrogressed spontaneously. To open the intact dura mater is not always a harmless intervention and should be avoided when possible. He also warns of the eventual danger from chloroform, ether or nitrous oxid with meningeal hemorrhage. Local anesthesia alone should be used in exploring the skull, as the vasodilation produced by general anesthesia may increase or induce the hemorrhage. The only fatality in his series was in a case in which ether had been given. He warns further that lumbar puncture, withdrawing a rather large amount of fluid, had better not be done at first as the reduction in the pressure might cause some clot plugging a vessel to drop off, and thus might set up a new hemorrhage. In the succeeding days, however, lumbar puncture has decided therapeutic value, reducing the pressure and evacuating the toxic products of the hemolysis. Among the symptoms which suggest meningeal hemorrhage are slight mental confusion, bilateral inversion of the plantar skin reflex, true defensive reflexes like those of the frog, and a sallowness from the hemolysis.

Physiotherapy After Injury of Peripheral Nerves.—Stouffs describes the preferable measures needed to act favorably on the injured nerve, on the paralyzed muscles, and on the psychomotor centers of volitional control.

Spontaneous Pneumothorax.—Fredericq found the heart pushed over to the left in a young soldier with a mild pulmonary tuberculous lesion. He had been taken with a sudden pain in the right kidney region, spreading to the shoulder. There was no vomiting, no dyspnea, no cyanosis, no cough, but radioscopy showed pneumothorax, the right diaphragm immovable, the right lung collapsed. The absence of decisive symptoms in this and in a second case in a girl of 17 suggests that unrecognized pneumothorax may be comparatively common. In the girl, both the pneumothorax and a focus of purulent pleurisy had escaped discovery at the clinical examination. The resonance on percussion seemed normal on both sides, and râles were pronounced also on both sides. She succumbed to progressive asphyxia without a clear diagnosis having been made.

Bulletin de l'Académie de Médecine, Paris

June 17, 1919, **81**, No. 24

*Instrumental Orthopedics. G. Bidou.—p. 797.
*Nitrogen in the Cancerous Liver. A. Robin.—p. 799.
*Asylums for Children with Inherited Syphilis. F. Balzer.—p. 811.
Symptoms from Softening of Corpus Callosum. Laignel-Lavastine. —p. 817.
*Registering Apparatus for Play of Joints. H. Dausset.—p. 819.
*Concussion from Severe Explosions. Chavigny.—p. 822.
*Antipneumococcus Serum. C. Truche.—p. 823.

Instrumental Orthopedics.—Bidou affirms that if the disabled person has anywhere in his body a segment which he can move at will, it is possible to devise some apparatus to utilize this power of movement and adapt it to some useful purpose. Each case has to be studied individually and to make the most of its possibilities requires a combination of

power of observation, mechanical skill and knowledge of anatomy and physiology. As an example of what it is possible to realize by this means, he says that a paraplegic by using the up and down and sideway movements of his shoulders might be able to make movements of progression. Jalaguier's comment on Bidou's apparatus is that they are so complicated their use will necessarily be extremely restricted.

Cancer a Ferment Disease.—Robin's study of the ferment origin of cancer was mentioned in these columns recently, page 152. He tabulates here the findings from five cases of liver cancer compared with normal livers. They confirm that the total nitrogen content of the cancerous liver is less than in the normal liver. The cancer is able to construct more histologic substance out of a given quantity of nitrogen than normal tissue is able to construct from the same. The insoluble nitrogen increases, while the content in soluble nitrogen grows less and less in the cancerous tissue; the exact reverse is observed in the relatively sound parts of the liver. He interprets these and other findings as evidence that the proteic elements of the cancer are formed from the products of autolysis of the proteic substances of the organ in which it is developing. This conforms to R. A. Kocher's discovery of the increase in the hexone bases in malignant tumors. It shows the existence of a cancerizable soil, and is the direct opposite of what is observed with parasitic diseases, such as tuberculosis.

Asylums for Children with Inherited Syphilis.—Balzer describes the work of the Welander asylums in Sweden, Norway and Denmark where children with inherited syphilis are given a home and collective treatment for one, three or four years. This seems to be the only way for treatment to be kept up systematically and long enough. One great advantage of such asylums is that wetnurses are saved from contamination by the children. The Paris public hospital service has had to pay out from $3,000 to $8,000 a year to wetnurses contaminated by syphilitic infants. Paris has only one institution approximating the Welander asylums, and this is not restricted to syphilitic infants.

Register of Joint Excursions.—Dausset's instrument records the scope of the movements of the joint, and serves besides as a universal ergograph and machine for active mechanotherapy.

Explosions and Concussions.—Chavigny relates some experiences which seem to conflict with the conclusions neurologists have been drawing from the war cases of aerial shock. He has long made a study of the effects of big explosions, and recently has had exceptional opportunities for this as large amounts of military explosives have been exploded to get them out of the way. The officer in charge, M. Sellier, has several times set off 350 kg. of explosives in one mass at one time. He lay on the ground at a distance of only 80 meters, merely covering his head with one of the box covers to protect it against any falling stones. The explosions were so violent that they broke windows 1,000 meters away and flung open or shut doors 3 kilometers distant. But they did not produce any pathologic effect on the observer at 80 meters. He did not have the auditory sensation of a loud explosion. He felt transiently something abnormal, but the sound wave did not seem to be clearly perceived by the ear, as if the sound wave was beyond the limits of the sounds normally perceivable by the ear. Persons farther away heard the noise of the explosion as terrific. The entire lack of pathologic phenomena in these repeated experiences confirms the negative results of Chavigny's experiments on animals which showed no compression or depression from the atmospheric waves of an explosion nearby. He emphasizes the importance from the medicolegal standpoint of this lack of injury from the severe explosions. It seems to testify that most of the *commotionés* have not been left with organic lesions, and hence that they need not be given the permanent disability pension. The pathologic phenomena observed thus belong in the domain of psychiatry and not in that of neurology, and hence the prognosis is generally so much the more favorable.

Pneumococcus Antiserums.—Truche relates that for years he has made a special study of serotherapy of pneumococcus infections and declares that the unmistakable benefit from it is now established beyond question. In pneumonia, defervescence follows in one or two days and the pulse drops to 80 on an average. In pleurisy the serotherapy effectually supplements surgical measures. In mixed meningococcus and pneumococcus meningitis the antiserums for each should be used. Blacks are very sensitive to pneumonia, but under this serotherapy Blazy found the death rate drop from 32 to 12 per cent. and Lassance, from 13 to 7 per cent. Truche immunizes the horses with very virulent pneumococci, killed with ether and alcohol, and diluted with large amounts of tepid physiologic fluid. He tests on mice the antiserum thus derived.

Bulletins de la Société Médicale des Hôpitaux, Paris

June 6, 1919, **43**, No. 19

*The Pathogenesis of Malarial Attack. P. Abrami and G. Senevet.—p. 530; Id.—p. 537.
*Hexamethylenamin in Typhus. Glatard.—p. 545.
*Digestive Antianaphylaxis. P. Pagniez and P. Vallery-Radot.—p. 549.
*Measurement of Spleen. A. Chauffard.—p. 554.
*Treatment of Alimentary Anaphylaxis. Joltrain.—p. 556.
*Cryptogenous Fever. Léopold-Lévi.—p. 559.
*Serodiagnosis of Syphilis. R. Bénard and M. Pinard.—p. 565.
*Intestinal Spirochetosis. G. Delamare.—p. 569.
Intestinal Moniliosis. G. Delamare.—p. 572.
Cancerous Linitis of Stomach in Soldier. P. Carnot.—p. 576.
*Malaria and Typhoid. E. Job and L. Hirtzmann.—p. 581.

Pathogenesis of Malarial Attacks.—Abrami and Senevet explain that the malarial attack is the consequence of an anaphylactic shock from the sudden passage into the blood of a heterogenous colloidal substance, from the bursting of large numbers of rosettes at one time. Their tests demonstrate that the blood may not show a single merozoite four hours before the ague chill, but an hour later there may be 450 per cubic millimeter. This testifies to the bursting of large numbers of rosettes, and the "crisis of hemoclasis" is then under way and reaches its height in two or three hours with the chill. This analogy between the ague chill and the anaphylactic shock suggests the possibility of warding it off by anti-anaphylaxis methods. It also explains some of the satellite symptoms of the ague chill. The algid phase is one of the most constant symptoms of the hemoclastic shock, and prompt intravenous injection of 1,000 gm. of physiologic serum containing 2 mg. of epinephrin has revived the patients at once in their experience. In two of their cases the apparent signs of death had been noted for five minutes when resuscitation followed this injection, supplemented by artificial respiration. Both these patients are now in perfect health. If the algid phase had been the result of insufficiency of the suprarenals, this could not have been remedied by this injection which, however, safely tided the patients past the danger point of the hemoclastic shock.

The assumption that the ague chill and fever are only the tardy consequence of the anaphylactic (hemolysis or hemoclasis) shock, brings the logical conclusion that it might be aborted by the preliminary injection of a small amount according to the Besredka method. They selected as the substance to be injected the patient's own serum, injecting 20 c.c. eight hours before the expected attack. They thus treated six patients who were having daily malaria attacks and who had not been treated otherwise. In three the injection had been made an hour or two too soon, but in the others the attacks were essentially attenuated or there was no chill or sweating. These effects were so marked under the circumstances that they demand further trials on a larger scale. Peptone given every two or three hours before the attacks might likewise ward it off as it wards off urticaria and migraine in certain cases. Although this would have no influence on the proliferation of the parasites, it might prevent the physical process of the sudden upset in the physical balance of the blood plasm. The fever is the manifestation of the upset in the blood, and the parasite does not induce the fever so much by its toxins as by its being a heterogenous colloidal body. This is probably not peculiar to malaria. Systematic study of the blood might show in other diseases a similar premonitory blood crisis.

Hexamethylenamin in Typhus.—Glatard reports a decided reduction of the temperature in six cases of typhus in which

he had given a daily intravenous injection of hexamethylenamin. The dose was 1.5 gm. in 5 c.c. of vehicle. No more than four doses were given in any case. The temperature began to go down after the first dose; the charts show the same drop by lysis in the three cases in which the drug was given early. A similar effect was observed in influenza, but it was not so prompt or so decided as in typhus.

Alimentary Antianaphylaxis.—A report of similar experiences by these writers was summarized, May 24, 1919, page 1577. Shellfish, lobsters, and condiments in the cases related seem to have been responsible for the urticaria and Quincke's edema. A complete permanent cure seems to have been realized by the preliminary injections of peptone.

Measurement of the Spleen.—Chauffard draws a line from the middle of the axilla to the trochanter region, the arm held above the head. This line serves as the base from which the ovoid spleen is palpated and percussed, and the outline marked also on the skin. A line is then drawn from the base line, axially, to the farther limit, forward, of the spleen. This axial line is bisected in the center by a line perpendicular to it. We thus have two lines that can be measured and compared from case to case, giving thus the approximate size of the spleen.

Alimentary Anaphylaxis.—Joltrain reports three cases in which the antianaphylaxis treatment proved effectual. Two of the patients were children who developed urticaria after eating eggs, or certain other food. The third was a young man with attacks of asthma nearly every evening, three or four hours after eating. All seemed to be cured completely by taking 0.5 gm. of peptone half an hour before breakfast and dinner for twenty days, with certain dietetic restrictions.

Cryptogenous Fevers.—Léopold-Lévi reports the details of three cases in children in which no cause could be found for the slight but tenacious fever. The thyroid seemed to be in an unstable condition, signs of deficient and of excessive thyroid functioning appearing irregularly. One of the children was physically and mentally inclined to myxedema mornings and to Basedow's disease evenings. The unstable temperature flared up and died down. The benefit from thyroid treatment in these cases confirms the assumption that the unstable thyroid was the main factor in the disturbances. Until thyroid treatment thus proved its efficacy, latent tuberculosis, chronic appendicitis, etc., had been suspected.

Serodiagnosis of Syphilis.—Bénard and Pinard extol the advantages of using fresh serum for the Wassermann reaction, and tell of their experience with it in 224 cases. They found this technic (Hallion and Bauer, 1912) simpler, earlier and more sensitive than others.

Dysenteriform Spirochetosis.—Delamare found refracting spirochetes in twenty of 142 specimens of pathologic stools examined. These spirochetes resembled so closely those of bronchial spirochetosis that they seemed to be identical. In treatment, arsphenamin or emetin (in cases of associated amebiasis) proved effectual.

Malaria and Typhoid.—If the malaria developing during typhoid or paratyphoid is recognized and gets proper treatment, the progrosis is benign except as the typhoid is aggravated. Paratyphoid bacilli may be found in the blood during malaria although sometimes apparently doing no harm.

Paris Médical

June 21, 1919, **9**, No. 25

*Wounds of the Chest. A. Schwartz.—p. 485.
*Rectal Polyposis. P. Carnot, Friedel and Froussard.—p. 495.
*Action of Cold on Malaria Parasites. E. Deglos.—p. 497.

Wounds of the Chest.—This is a ten page general review of this subject from the clinical and therapeutic standpoints.

Rectosigmoid Polyposis.—Carnot, Friedel and Froussard report a case of generalized polyposis of the terminal bowel in which a cure was realized under local applications of magnesium chlorid (*chlorure de magnésium*). The farmer-soldier of 36 had long had chronic ulcerative rectocolitis on the basis of which innumerable small polyps had developed. The infiltration was so intense that the lumen of the rectum no longer admitted the finger. The rectosigmoid segment was dressed every day, after a cleansing enema, with a thick agar mucilage containing at first 10 gm. of magnesium chlorid and later 5 gm. in about 250 gm. of this vehicle. The mucilage was introduced above the stenosis, using a sound and Guyon syringe. This local dressing was borne easily and retained longer each time, two, six, ten hours. The 5 gm. strength is borne well; the stronger solution was expelled too soon. Rectoscopy in less than three weeks showed that the ulcerations had healed, and in the following two or three months the polyps were gradually absorbed until there are now only a few minute polyps that have not been absorbed, and the general health is excellent. The rectosigmoid segment of the bowel is subject to antiperistalsis if the desire to empty the bowel is resisted. They confirmed this with roentgenoscopy in several other patients. Hence the local dressing injected is carried up and spread around. It may be forced back as far as the cecum. A mucilaginous vehicle with emetin may prove useful in local treatment of amebic dysentery in the same way.

The Crescents of Malignant Tertian Malaria.—Deglos noted that all the cases of malignant malaria developed during warm weather, and that during the cold months the parasites already in the blood left the periphery and installed themselves in the spleen. Here they were able to resist treatment until a combination of quinin, arsenic and methylene blue routed them out and cured the patients. Experimental research on the action of cold on these parasites confirmed their apparent inability to stand cold.

Presse Médicale, Paris

June 23, 1919, **27**, No. 35

*Retention of Chlorids and Urea in Nephritis in Children. P. Nobécourt.—p. 341.
*Regeneration of Bone. D. de Frenelle.—p. 342.

Retention of Urea and Chlorids with Nephritis in Children.—Summarized, July 19, 1919, page 230.

Regeneration of Bone.—De Frenelle has watched the healing process in a number of war wounds in which the bone was widely exposed. He saw that when there was a bridge of bone between the two fragments of the long bone, the new forming bone issues from the marrow canal of each fragment, and lines up on the lower surface of the bone bridge, working toward the center of the bridge where the two ends finally meet. The wider the bridge surface facing the marrow canal, the wider the growth of new bone tissue creeping along it from the end. The new forming bone tissue works its way into the bone bridge better the more spongy its texture. As this proceeds, the bone bridge becomes spongier, the holes larger, the new forming bone tissue evidently appropriating to itself the calcium salts in the bone bridge. These observations teach the necessity for opening up the marrow canal into sound tissue, from which the new forming bone tissue can sprout. In implanting a bone graft to serve as the bridge, space must be left on the under side for the new forming bone to creep along it. The implant should be of spongiosa bone and should be strong, the strength depending more on its width than on its thickness. The wider it is, the larger the expanse of regenerating bone that will line it. If too thick, it will hamper the regeneration of the bone by connective tissue-vascular regeneration; this occurs at the sides of the bone bridge, or on top, from scraps of bone and periosteum débris left from the traumatism.

The bone bridge is finally absorbed until nothing is left but a thin shell over the thick mass of new formed tissue which unites the fragments of the bone. The tissues that surround the implant have little to do with the regeneration of bone, and hence it is not necessary to freshen them; but the ends of the implant and of the bone fragments must be carefully freshened. It seems to be immaterial whether the graft is accompanied with its periosteum or not. The advantage of keeping the periosteum is apparent only when the implant gets broken in grafting it. It is not necessary to mortise the bone graft in place. Pointing the ends of the implant and sticking them into the marrow cavity of the stumps holds it firm, but to reenforce it a metal cuff is fitted

to each stump with a narrow but strong metal bridge between them which serves to immobilize and protect the bone implant without touching it.

June 26, 1919, **27**, No. 36

*Natural Carbonated Baths in Treatment of High Blood Pressure. C. de la Carrière.—p. 349.
*Roentgen Findings with False Pneumothorax. H. Lebon.—p. 351.
*War Psychiatry. R. Benon.—p. 352.
*Integral Segregation of Urine. Gudin (Rio de Janeiro).—p. 354.

Carbonated Baths in Treatment of High Blood Pressure.—The natural carbonated baths at Royat are said to have a general modifying and tonic action on the nutrition and diuresis. They also dilate the peripheral vessels and thus aid in lowering the blood pressure, while they tone up the heart.

False Pneumothorax.—Lebon's roentgenograms illustrate the decisive differential importance of roentgen examination in cases of supposed pneumothorax. Three typical cases are described. In one the stomach was distended with gases and projected far into the left side of the thorax, pushing the heart over toward the right. In the second case the air bubble in the stomach lay between the left margin of the heart and the wall of the chest. In the third case the stomach was greatly distended with gases and projected high in the left thorax; the roentgen picture was crossed with three large shadow stripes, all starting from the lower right corner.

War Psychiatry.—Benon exclaims that etiology is a thankless science, and analysis of the causes of war nervous affections is peculiarly difficult. One factor he thinks has not been given full credit. This factor is physical overexertion. It entails a condition of nervous exhaustion, general asthenia, and this may entail various psychoses, hypochondria, melancholia, ideas of persecution or dementia praecox. When the asthenia has subsided, or if it has given way to mania or hypersthenia, various forms of intermittent psychoses may develop.

Segregation of the Urine.—Gudin remarks that the ordinary ureter catheter allows urine to flow down along its sides, so that actual segregation of the urine from each kidney is impossible. He remedies this by having the catheter tip made with a pointed olive. This is easily worked into the ureter mouth, and there the olive plugs the lumen of the ureter completely so that no fluid can escape outside of it. He gives illustrations of the cystoscope containing the two olive-tipped catheters. He introduces the catheters into the bladder first, and then slips the outer ends into the cystoscope which is then pushed up into the bladder, guided by the two catheters. The olive tips are too large to enter the lumen of the cystoscope, so the catheters are worked backward into the cystoscope as the latter is introduced. It is then a simple matter to introduce the olive into the ureter; it does not have to be pushed in far to collect all the urine from that kidney. He uses a cystoscope in which the light and the opening for the ureter catheter tips just below are on the opposite side from the curve of the tip. He has been applying this method for three years and with constant success.

Progrès Médical, Paris

June 21, 1919, **34**, No. 25

*Spinal Anesthesia. H. P. Achard.—p. 239.
Spa Treatment of Vascular Affections and Hypertension. A. Mougeot.—p. 240.
*Secondary Sarcomatous Polyposis. L. Thévenot and Bouget.—p. 242.
*Iodin Vapors in Ear, Nose and Throat Disease. A. Maurice.—p. 244.

Spinal Anesthesia.—Achard states that he has applied stovain low rachianesthesia in 123 cases and procain anesthesia in 290—thus well over the 400 mark. There were no fatal accidents and no durable injury in any case, but some disturbances developed within an hour or during the three following days in a few. Analysis of these cases demonstrates, he says, that the only failures were due to defective technic, and with greater experience they grew less frequent. The only mishaps were transient headache indicating slight irritation of the meninges. This was noted in 10 per cent. of the procain cases and in 50 per cent. of the stovain cases. The few cases in which an English make of procain was used all developed headache or pain in the spine; in two cases the latter kept up for five days. Postoperative vomiting and nausea for a few minutes were noted in 10 per cent. of all the cases, and a tendency to brief syncope was evident in 4 per cent. of the procain and in 10 per cent. of the stovain cases. Incontinence of the sphincters is annoying. It occurred in 50 per cent. of stovain cases but less frequent with the procain. The operations were all below the umbilicus and no attempt was made to have high anesthesia.

Sarcomatous Polyposis.—In Thévenot's case and in one reported from Athens the sarcomatous polyposis of the small intestine was secondary to a sarcoma in the mediastinum or rectum. In both the polyposis induced invagination.

Nascent Iodin in Treatment of Ear, Nose and Throat Disease.—Maurice has applied *enfumage iodé* by heating iodoform and insufflating the vapors directly to the focus in tonsil, nose, maxillary sinus or middle ear. In chronic otitis media it has proved a potent adjuvant to the usual measures. It often heals suppuration in the ear without the necessity for destructive operations. He warns that not more than two or three jets should be insufflated at one sitting, as more than this may cause painful distention.

Revue Mens. de Gynécologie et d'Obstétrique, Paris

May, 1919, **14**, No. 5

*Pituitary Treatment in Gynecology. P. Dalché.—p. 165.
Peritonitis from Induced Abortion: Recovery after Enterostomy. L. Aubert.—p. 182.
*Hydramnios after Death of Fetus. P. Balard.—p. 187.
*Gynecologic Treatment of Retrodisplacement of the Uterus. H. Sosnowska.—p. 191.

Pituitary Treatment in Gynecology.—Dalché gives pituitary by the mouth, preferring the dry extract of the whole gland, giving from two to four cachets a day of 0.10 gm. each. This treatment can be applied in every case of metrorrhagia, and it often will give good results. But success depends on its being kept up perseveringly for weeks and months with bleeding fibromas, diffuse fibromatosis and sclerosis of the uterus, retrodisplacement with congestion, virginal metrorrhagia, intermenstrual dysmenorrhea—whenever, in short, the aim is to modify a condition of long standing. For example, a young girl with too frequent and too profuse menstruation should take the pituitary extract every day for a month, then for two weeks each month, beginning the week before the anticipated menses and continuing till the close. The other two weeks he orders 10 drops of tincture of hamamelis in a little water before the two principal meals. In case of a fibroma he alternates the two pituitary weeks with other organotherapy, and may conclude with roentgen treatment. Congestions and excessive functioning of the ovaries or thyroid may likewise benefit by pituitary treatment, as also certain types of headache, even those suggesting false brain tumors, with exacerbations at the menstrual periods. It seems in these cases as if the endocrine upset had induced congestion in the pituitary body and that this congestion was what causes the headache. The action of pituitary treatment is not restricted to the genital organs; it may attenuate and suppress the hot flashes and sudden sweats of the menopause and other symptoms of ovarian insufficiency. It seems to promote sleep, appetite and diuresis, and combat asthenia.

Hydramnios Increases After Death of Fetus.—Balard reports the case of a woman who had had puerperal endometritis, and the fetus died at a following pregnancy, not long before term, but the hydramnios grew larger and larger thereafter. Three liters of fluid at least flowed from the uterus after delivery of the child. The uterus had kept on rapidly increasing in size after the fetus had died. This does not harmonize with the current views in regard to the causation of hydramnios.

Gynecologic Treatment of Retrodisplacement of the Uterus.—Sosnowska discusses how best to reduce the congestion in the pelvis, and also tone up the round ligaments with muscular exercise so they will regain their elasticity and pull the uterus up into place. The resorption of adhesions must also be promoted. The diagnosis of retrodeviation is not

always easy; the symptoms may suggest tubal pregnancy, a hematoma in an ovary, a suppurating salpingitis or small dermoid cyst. These excluded, gymnastic exercises and massage may restore tone to the muscles, and the displacement then will correct itself. Brandt advocates "pelvic manotherapy" by introducing thumb and forefinger into the vagina and rectum and manipulating the uterus between them, the patient standing. Or with the finger in the vagina and the other hand on the abdomen the uterus is worked up into its normal position, the patient reclining. These different maneuvers are shown in five illustrations. The pelvis is exercised by three movements done by the patient as she lies on her back with knees spread apart: lifting the buttocks above the plane of the bed, contracting the levator ani muscles as if to retain a large enema, and at the same time pressing the knees together against resistance. The patient must be trained to do these exercises separately and then together, morning and evening. The bowels must be kept open; out of door life, deep breathing, sun baths, etc., aid in the general restoration of vigor and tone, as retrodeviation is usually the result of general ptosis or relaxation of the ligaments stretched by a pregnancy. The above treatment is particularly effectual with intermittent deviation from congestion in the pelvis, usually traceable to chronic intestinal stasis.

Correspondenz-Blatt für Schweizer Aerzte, Basel

June 28, 1919, **49**, No. 26

Combined Treatment of Influenza. A. v. Salis.—p. 953.
Industrial Ventilating and Humidifying Devices in Tuberculosis Wards, etc. J. Karcher.—p. 967.
Sources of Error in Examining the Blood. F. Rohrer.—p. 971.

Annali d'Igiene, Rome

March, 1919, **29**, No. 3

*Pathogenesis of Cholera. IV. G. Sanarelli.—p. 129.
The Epidemics of Influenza. A. Ilvento.—p. 132.
*Typhus and Serodiagnosis. G. Ficai.—p. 145.

Pathogenesis of Cholera.—In this fourth preliminary note Sanarelli discusses the predilection of the cholera vibrios for the digestive tract, or as he expresses it, the gastro-enterotropism of the cholera germs.

Typhus and Its Serodiagnosis.—Ficai found agglutination of *Proteus X* absolutely constant in typhus, even very early and in the abortive, almost walking cases. Tying a cord around the arm is also instructive. This brings into prominence even the faintest and vaguest exanthems, and the exanthem returns if it has bleached out.

Gazzetta degli Ospedali e delle Cliniche, Milan

June 15, 1919, **40**, No. 48

Intracranial Infections after War Wounds. E. Greggio.—p. 482.

Riforma Medica, Naples

June 7, 1919, **35**, No. 23

Serodiagnosis of Influenza. F. Durand.—p. 458.
Errors in Diagnosis of Abdominal War Wounds. E. Santoro.—p. 460.
Spontaneous Pneumothorax in the Tuberculous. R. Giurato.—p. 464.

June 14, 1919, **35**, No. 24

*The Cerebrospinal Fluid with Spasmophilia. G. Genoese.—p. 477.
The Geometrical Illusions of Radiology. E. Pittarelli.—p. 479.
Cortical Blindness from War Wound; Recovery of Vision after Operation. L. Cicerale.—p. 480.
Mechanism of Fracture of Bone. E. Aievoli.—p. 482.
Partial or Dissociated Retention of Bile Salts. A. Ferranini.—p. 484.

Cerebrospinal Fluid with Spasmophilia.—Genoese found the spinal fluid under high pressure as a rule in children with spasmophilia. It seemed normal otherwise except that when acetone was found in the urine it could usually be found also in the spinal fluid.

Anales de la Facultad de Medicina, Montevideo

March-April, 1919, **4**, No. 3-4

Traumatic Shock in War. P. L. Wertheimer, R. Fabre and R. Clogne.—p. 149.
*Gallop Rhythm in Children. L. Morquio.—p. 168.
*Acute Otitis Media. J. Giannetto and P. J. Martino.—p. 194.
*Peritonitis from Typhoid Perforation. G. J. Devincenzi.—p. 214.
*Further Applications of the Cystoscope. L. P. Carve.—p. 262.

Gallop Rhythm in Children.—Morquio declares that the sounds with gallop rhythm have a different significance in children and in adults. In adults it is an evidence of interstitial nephritis and arteriosclerosis, of which the most characteristic manifestation is the overhigh blood pressure. In children, both arteriosclerosis and interstitial nephritis are exceptional. He has met only one case in a child of interstitial nephritis like that in adults; it followed infectious purpura. Gallop rhythm in children is a sign of weakness of the heart, or of toxic action on its muscle or innervation, or of inflammatory or degenerative processes in the myocardium. Consequently we encounter gallop rhythm in a number of different diseases entailing these conditions, such as acute nephritis, heart disease, and in typhoid. He describes in detail some cases of different types. In one a girl of 9 with diphtheric polyneuritis and paralysis showed pronounced gallop rhythm for a few days, but then it disappeared as the child slowly recovered. The heart findings were normal when she was discharged from the hospital. Antitoxin had been given freely to combat the evident nephritis, notwithstanding the gallop rhythm and that antitoxin had been given during the primary diphtheria. It had evidently not been given in sufficient amounts then. Another child of 4 presented intense gallop rhythm as almost the only manifestation of an acute nephritis. It disappeared in a week under repose and restriction to a milk diet, flushing the intestine well every day.

Diphtheria antitoxin has never caused any injury in the numerous cases in which he has given it when there was nephritis. It benefited not only the causal diphtheria but the nephritis as well. In one case of severe diphtheria the anasarca and intense albuminuria had withheld the physician from giving antitoxin freely, but after the child was given large doses of antitoxin after intubation, the child's condition began to improve at once. Nothing contraindicates antitoxin in a case of diphtheria. Another case is described in which the precordial gallop sounds were due to the grave toxic condition in severe typhoid fever. The gallop rhythm denoted myocarditis which assumption was confirmed a week later by necropsy. Myocarditis is a rather frequent complication of typhoid in children; he has encountered it in from 5 to 6 per cent. of his cases of typhoid in children, not always in the graver cases. It generally comes on by the end of the second or third week. In this case it enabled the myocarditis to be recognized from the first and warned of the peculiar gravity of the case, although typhoid myocarditis as a rule is less severe in children than in adults. Calamet has compiled twelve cases with a favorable outcome in a total of twenty-four cases.

Children who have had the myocardium seriously touched by the infectious process should be kept under supervision. It may explain sudden death not long after, or acute asystoly, etc., in children after special physical exertion, or the myocarditis in childhood may be the basis of heart disease in the adult. The details of another case are given in which the cardiopathy with the gallop rhythm was the result of acute rheumatism; even if the child had survived the acute stage, he would have suffered from adherent pericarditis. Morquio deplores that some physicians regard rheumatism in a child as comparatively unimportant, and do not give the salicylates in adequate dosage to ward off invasion of the heart. He reiterates that sodium salicylate given in time and in proper doses will almost invariably ward off the participation of the heart. When there is persisting gallop rhythm with rheumatismal myocarditis, along with other signs of cardiac insufficiency, the assumption is justified of grave changes in the heart muscle. It may be encountered also, without being constant, in the exacerbations of chronic conditions. With acute nephritis, mere dilatation of the heart may bring on gallop rhythm, but the whole is transient. The process is graver with rheumatismal heart disease, although it may subside with the other functional disturbances. The prognosis is graver in typhoid fever and in severe toxic-infectious conditions in which the gallop rhythm is a sign of severe myocarditis.

Otitis Media.—Giannetto and Martino describe with sixteen illustrations the various ways in which an inflammatory

process in the middle ear may become walled in, and how it may require a specially localized paracentesis.

Peritonitis from Typhoid Perforation.—Devincenzi comments on the unprecedented frequency of cases with perforation of the bowel during the last epidemic of typhoid. It occurred in 14.4 per cent. of the eighty-four cases in men at the Maciel Hospital, while he has been unable to find on record any such high percentage. The range in 23,113 cases he has compiled from international sources was from 1.75 to 6.54, with an average of 3.73 per cent. The women in his hospital seemed to escape, there being only 3.33 per cent. among the sixty women. He discusses the symptoms, pathologic anatomy and treatment. With prompt operation, 27 per cent. were cured in the cases he has compiled and 38.46 per cent. in his own service. He describes the technic he prefers, isolating the injured loop, with a double plastic reenforcing of the less gravely affected tissues. The operative cases are reported in detail.

Cystoscopy.—Carve expatiates on the advantages of the double catheter cystoscope. He uses a No. 23 or 24 Charnière which allows the introduction of two No. 16 Pasteau catheters so that both ureters can be catheterized at one examination. The cystoscope also enables meatotomy of the ureter to be done with precision and without danger. It also facilitates intravesical electrocoagulation procedures. It can be used for dilating the ureter and draining the kidney without special apparatus or catheters. It may also ward off disturbance from local accumulation of blood with intense renal hematuria, and, finally, it may confirm the diagnosis of a bifid ureter. He describes each of these special applications, giving instructive instances.

Crónica Médico-Quirúrgica, Havana

April, 1919, **45**, No. 4

Intellectual Americanism. J. E. López Silvero.—p. 115.
Countries that Have High Regions Should Utilize Them to Reduce Infant Mortality. J. Santos Fernández.—p. 117.
Necessity for Inaugurating in Cuba Prophylactic Treatment of Venereal Diseases. J. E. López-Silvero.—p. 120.
*Subconjunctival Hemorrhages. F. M. Fernández.—p. 131.
Gonococcus Dacryocystitis. F. M. Fernández.—p. 135.
Eugenics in Buenos Aires. J. Santos Fernández.—p. 135.

Subconjunctival Hemorrhages.—Fernández relates that multiple subconjunctival hemorrhages developed in the lower lids and bulbar conjunctiva of a robust young man the day after the death of his father. There had been no physical effort, and the only explanation possible seemed to be the prolonged weeping.

Gaceta Médica de Caracas, Venezuela

May 31, 1919, **26**, No. 10

Chagas' Disease in Venezuela. E. Tejera G.—p. 103.

American Trypanosomiasis.—Tejera presents conclusive evidence that the trypanosome thyroiditis described by Chagas in 1907 as common in children in certain parts of Brazil prevails also in Venezuela. He reports two cases, in an infant and a boy of 2, belonging to the states of Trujillo and Zulia. His extensive study of the subject has demonstrated further that it is transmitted by a different insect from the one responsible for it in Brazil, *Lamus* (*Conorhinos*) *megistus*, as this does not seem to occur in Venezuela. The bug responsible for the transmission in Venezuela is *Rhodnius prolixus Stal*, as he determined by extensive experimental research and these clinical experiences. These insects in nature may harbor *Trypanosoma cruzi*. The insects are called by various names, pito, chupon, quipito, chinche de monte and chipo. It is a night-biting insect of the reduviidae family. Some specimens sent to Paris in 1913 from Venezuela were artificially infected by feeding them with *Trypanosoma cruzi* sent from Bahia, Brazil. Rincones presented Tejera's report sent from the laboratory of the Caribbean Petroleum Company at Mene Grande, and he added that a few years ago he urged research in Venezuela to find whether this American trypanosomiasis was restricted to Brazil alone. Tejera mentions in conclusion that as goiter seems to be endemic in the Santander district in Colombia, Chagas' disease probably could be discovered there also. He was examining the rhodnius for leishman bodies, in a study of American leishmaniosis, when he was surprised by the discovery in them of *Trypanosoma cruzi* of Chagas' disease. But his clinical cases of the latter came from a different district, and he found the trypanosome likewise in specimens of rhodnius from the environment of the patients. Rats, cats, monkeys and other animals inoculated from the insects developed the trypanosomes in large numbers in the blood. Ayala added that Tejera's research seems to exculpate the drinking water in respect to endemic goiter. He appealed further for research to decide whether there may not be some plant which serves as a host for the trypanosome like the euphorbia for the leptomonas (Iturbe), suggesting some zoological affinity between plants, leishman bodies and trypanosomes.

Medicina Ibera, Madrid

May 31, 1919, **7**, No. 82

*Rachitis and Digestive Disturbance. P. Pereda y Elardi.—p. 161.
Parenteral Injection of Milk. B. C. Duran.—p. 162. Cont'n.
Premature Separation of Normal Placenta. Apaolaza.—p. 164.

Rachitis and Digestive Disturbance.—Pereda insists that the bone anomaly in rachitis is not due principally to the deficiency in calcium, as infants fed on breast milk but not getting enough do not show any signs of rachitis or spasmophilia. Cow's milk, although it contains more calcium, breeds rachitis; not human milk. Cow's milk produces putrefaction in the intestine, and the toxic substances thus generated are responsible for the rachitis. Treatment of rachitis should therefore aim to restore normal conditions in the digestive tract, after which the bone conditions will right themselves, he declares, as the infant gains in weight.

Plus-Ultra, Madrid

March, 1919, **2**, No. 9

*Cholera, Typhoid and Vegetables. F. Murillo.—p. 115.
*Emetin in Hemoptysis. A. N. Blasco.—p. 121.
Peculiar Arrangement of Large Intestine. A. H. Carmona and I. Camacho.—p. 124.
*Puerperal Eclampsia. P. Calvo.—p. 129.
Early Diagnosis of General Paralysis. C. Juarros.—p. 135.
Diathermia and its Clinical Application. L. C. Salse.—p. 136.
Fibroneuroma. A. Guzmán.—p. 147.
Vacuum Extraction of Cataract. B. Castresana.—p. 149.
Graphic Record of Lung and Bronchus Findings. V. Montenegro.—p. 158.
Attenuated Criminal Responsibility. E. F. Sanz and others.—p. 159.
Hysteria. H. Jaworski.—p. 166.
Associated Cancer and Syphilis. Sicilia.—p. 170.

Cholera, Typhoid, Fruit and Vegetables.—Murillo found typhoid bacilli still active and virulent from thirty to thirty-six days after they had been incorporated with garden dirt, or after low growing fruits and vegetables had been sprayed with them. In sterile sand they lived at least fifty-five days. These facts suggest that salads and raw fruits and vegetables of different kinds are a considerable factor in typhoid in Spain. His experiments with cholera germs were equally conclusive up to three weeks in soil contamination and two weeks in irrigation.

Emetin in Hemoptysis.—Blasco reports that he has succeeded in arresting the tendency to hemoptysis with emetin when all else had failed, and he regards it as a most powerful aid in combating hemoptysis in pulmonary tuberculosis. He injected subcutaneously 0.04 gm. of emetin hydrochlorid in 1 c.c. of vehicle. It never caused pain or inflammation, even when three doses were injected in twenty-four hours, to a total of 0.12 gm. The tendency to hemoptysis seemed to be arrested in from one to three hours except in the cases with fever and in the subacute forms of pulmonary tuberculosis. With these, emetin does not display any influence. Its therapeutic action is due to its effect on the smooth muscle fibers, and electively on the bronchopulmonary vessels. It should not be given to pregnant women on account of the danger of abortion, and old, inactive specimens of emetin should never be used.

Puerperal Eclampsia.—Calvo remarks that women are too apt to bear in silence and ascribe to the pregnancy alone certain symptoms which should warn of impending trouble.

Especially during the last month, headache, epistaxis, pain in the kidney region and high arterial pressure should cause the physician to be sent for at once. In a case described in a young primipara this was not done until eclamptic convulsions had developed. The pulse was hard and fast. On exploring the abdomen, the uterus contracted and this brought on another convulsion. As delivery was impending, he completed manually the dilatation of the cervix, already as large as his palm, and delivered an unusually large child. As the placenta came away there was much hemorrhage from inertia of the uterus, but it subsided under pituitary extract. The convulsions then returned every half hour, twenty-four in all, until he injected morphin and gave chloral by the rectum. After this there were no further convulsions but the woman lay unconscious for forty-eight hours, the organic functions, urine, lochia and stools, suppressed. Then the temperature ran up high and he gave 500 gm. of sugar solution and an embrocation of aromatic vinegar with a hot pack, and drew the urine. It was small in amount, very turbid and fetid, with 1.7 per cent. sediment, half of which was made up of streptococci and colon bacilli. The serotherapy and aromatic vinegar were applied again as the temperature ran up anew to 104 F. The urine was drawn every two hours and the vagina was douched with boiled water, and water was given by rectum. The woman gradually recovered, the urine still testifying for some time to suppuration in the urinary passages until recovery finally seemed complete.

Repertorio de Medicina y Cirugía, Bogotá

June, 1919, **10**, No. 9

*Deafmutism. R. F. Vega.—p. 451.
Hormones, Vitamins and Symbiotes. E. Gómez A.—p. 463.
*Exophthalmic Goiter. A. Rocha G.—p. 468.
Indications for Arsphenamin in Syphilis. M. A. Rueda G.—p. 472.

Deafmutism.—Fajardo Vega discusses deafmutism from the standpoint of legal responsibility, querying whether the deafmute's being shut off from the conventional training does not preclude his having a proper conception of abstract ideas of right and wrong. In his expert testimony in a concrete case described, he declared that deafmutism does not compromise the mind, and deafmutism should not be classed with dements as is done by the Code now in vogue in Colombia, the words *demencia* and *sordomudez* being used as if synonymous.

Exophthalmic Goiter.—Rocha's patient, a woman of 65, presented the complete picture of the disease according to the classic descriptions. After marked improvement under direct thyroid treatment for a time, the symptoms began to grow worse. Then followed great and persisting improvement under treatment with the blood from a goat thyroidectomized for the purpose. This treatment had to be suspended at the fifth month, and the symptoms reappeared but were transiently benefited by thyroid treatment again. The thyroid thus showed alternating phases of excessive and deficient functioning.

Revista de la Asoc. Médica Argentina, Buenos Aires

February-March, 1919, **30**, No. 171-172

*Epinephrin in Heart Block. F. C. Arrillaga.—p. 193.
*Benzol in Treatment of Uterine Cancer. J. Bordarampé.—p. 237.
*Tuberculosis of Pubis. J. M. Jorge, Jr.—p. 243.
*Improvement in Psychoses after Operations. G. Madero.—p. 276.

Epinephrin in Heart Block.—Arrillaga gives twenty-nine electrocardiograms from six patients with more or less complete interruption of the muscular connection between the auricle and ventricle. The cardiograms mirror the effect of epinephrin under these conditions. The auricle and ventricle react to the epinephrin parallel and simultaneously as a rule, but occasionally the ventricle responds first. The epinephrin accelerates the contractions, and the effect is more pronounced the greater the deficiency in suprarenal functioning. The epinephrin was always injected subcutaneously, 0.001 gm., and cardiograms were taken at intervals up to an hour and a half afterward. In one man of 55 with a ventricle beat of 30 and an auricle beat of 93, the latter increased to 159 while the auricle beat ran up to 129, but the normal rhythm was never restored in any of the tests in any of his cases. Even when the rhythm seems normal to the finger, the electrocardiogram will show the anomalies. He adds that epinephrin *constituye toda una medicación* in heart block, and that it should not be forgotten in transient heart block from the use of drugs or effect of toxins.

Benzol in Treatment of Uterine Cancer.—Bordarampé had a case of epithelioma of the uterine cervix which was inoperable and progressing and radiotherapy was not available at that time. As a last resort, he applied a tampon wet with pure benzol directly to the neoplasm, leaving it in contact for five minutes and then replacing it with a dry tampon. Besides this, two douches were given daily, each with 2 liters of hot boiled water containing each 50 drops of benzol. The fluid was stirred while the douche was being given. Under this treatment the neoplasm shrank and healed over, and in four months the woman increased 10 or 12 kg. in weight and felt very well. The cancer healed until its operative removal was justified. In a second, similar case the cancer shriveled to a very small burch under six months of treatment. Then it began to ulcerate again, its aspect then suggesting a superposed syphilitic lesion as the Wassermann reaction was positive. Arsenic and mercury were then given, but under this treatment the cancer flared up anew and metastases developed at various points. Seven other patients have been treated since, with permanent success so far as known. Two are still under treatment; one is progressing well but the other has hemorrhages, and no measures seem able to arrest this tendency to hemorrhage.

Tuberculosis of the Pubis.—Jorge gives the details with illustrations of a case of symmetrical tuberculous fistulas in the pubis as the only appreciable manifestation of the disease. The patient was a little girl of 8, weighing 21 kg. The fistulas healed at a seashore sanatorium and the child weighed 35 kg. when sent home definitely cured. Jorge has been able to find on record only sixty cases of tuberculous lesions in the pubis, and the case histories are incomplete in many of these. As a rule the lesion was the only manifestation of the disease except when it was merely an extension of tuberculous hip joint disease. The pain usually is not severe, and it comes on after exercise, but extremely painful points can be discovered in the pubis. Even after apparently complete cure, the focus may flare up again many years later, especially after a pregnancy, or without apparent motive in strong and robust men. In his case the abscesses kept suppurating after six months of general treatment, heliotherapy, etc., and three months of Beck's paste or other local measures. Then he curetted the fistulas and the foci in the bone, and this started the process of local repair. Radiography soon showed that healing was complete. There does not seem to be any need for resection of the pubis, as ample curetting apparently answers every purpose.

Surgical Affections and Psychoses.—Madero reports three cases in which an operation for appendicitis, for an abscess in the thigh or stones in the bladder was followed by the subsidence of the tendency to delirium and melancholia. The surgical affection in each case was a chronic infectious process with acute exacerbations and much pain. These psychoses of infectious origin are entirely distinct from the delirium of a true infection which subsides with the infectious disease. The "peripheral delirium" may outlast the peripheral lesion, and may keep up until the general health improves after the disease focus has been eradicated. The patient with this kind of a psychosis, he remarks, is a "hypochondriac interpreter of organic mischief."

Revista Cubana de Obstetricia y Ginecología, Havana

April, 1919, **1**, No. 4

*Limitation of Indications for Curetting the Uterus. E. R. de Aragón.—p. 181.
Obstetrics from Life Insurance Standpoint. J. F. Arteaga.—p. 183.
*Eye Symptoms in Toxemia of Pregnancy. F. M. Fernández.—p. 187.

Indications for Curetting the Uterus.—De Aragón regards hemorrhagic endometritis as the only absolute indication for curetting the uterus, but the curet may be useful also to

obtain scraps for examination. It is by no means always harmless, and the simplicity of the procedure does not authorize its abuse.

Eye Symptoms of Pregnancy Toxemia.—Fernández reviews recent literature on this subject and the indications for treatment when retinitis or other ocular manifestations develop.

Revista Española de Obstet. y Ginecología, Madrid

April, 1919, **4**, No. 40

Roentgen Treatment of Uterine Myomas. F. Botín.—p. 145.
*Early Diagnosis of Uterine Cancer. V. Aza.—p. 152.
*Puerperal Eclampsia. P. Calvo.—p. 157.

Early Diagnosis of Uterine Cancer.—Aza's article was summarized on page 304 when it appeared elsewhere.

Puerperal Eclampsia.—See abstract of Calvo's article in *Plus-Ultra* above.

Revista del Instituto Bacteriologico, Buenos Aires

March, 1919, **2**, No. 1

*Nonspecific Treatment of Anaphylaxis. R. Kraus.—p. 1.
*Typhus in America. R. Kraus.—p. 19.
*Typhus in Argentina. M. I. Battaglia and B. Barbará.—p. 35.
*Vaccine Treatment of Influenza. R. Kraus and L. Kantor.—p. 59.
Pathologic Anatomy of Influenza. A. H. Roffo.—p. 73.
*Bacteriology of the Air. J. V. Negrette.—p. 85.
Normal Beef Serum in Treatment of Anthrax. IV. J. Penna, J. B. Cuenca and R. Kraus.—p. 89.
*Vaccination against Anthrax. R. Kraus and P. Beltrami.—p. 98.
*Epizootic among Horses. R. Kraus, G. Fischer, and L. Kantor.—p. 114.

Nonspecific Treatment of Anaphylaxis and Allergy.—Kraus describes what is known to date in regard to active and passive anaphylaxis and specific and nonspecific treatment. With his co-workers at the Hospital Muñiz he noted that normal beef serum used in treatment of anthrax caused serum sickness in only 2.1 per cent. of 290 patients treated with it. They proceeded to make a bovine antiserum for both diphtheria and tetanus, using cattle instead of horses for production of the antiserum. This bovine antiserum is not so potent as horse antiserum, but serum sickness was very rare with it, even when large quantities were injected to bring the amount of units up to the required figure. Serum sickness was also very rare when the antiserum from both sources was injected together or, better yet, first the bovine and then the horse antiserum. When the horse antiserum was injected first, 27.2 per cent. of the thirty-three diphtheria patients developed urticaria and 18.1 per cent. serum sickness. Only 3.1 per cent. developed serum sickness among ninety diphtheria patients treated with the bovine antiserum alone. Kraus refers further to the attenuation of scarlet fever in children previously injected with horse diphtheria antitoxin, as reported by Benjamin and Witzinger, and the benefit from normal beef serum in hay-fever. Heterobacteriotherapy and protein therapy and the modification of certain pathologic processes under the influence of intercurrent infection, in connection with the above, all suggest that we are entering on an era of anti-allergy therapy as the logical next step from antitoxin therapy.

Typhus.—Kraus relates the history of typhus in America from its first recorded epidemic appearance early in the sixteenth century, when 200,000 persons died from it in Peru. In South and Central America, Mexico and India, typhus seems to be restricted to mountainous regions and is rarely encountered on the coast. Battaglia and Barbará report their experiences in stamping out an epidemic of typhus in Argentina.

Vaccine Therapy of Influenza.—Kraus and Kantor found the influenza bacillus in 60 per cent. of sixty cases but always associated with the pneumococcus, streptococcus and parameningococcus. In 36.6 per cent. only these were found. They prepared a vaccine with all these bacteria from the patients, treating the bacteria with ether and injecting subcutaneously a dose of 1,000 millions once or twice. Among 204 healthy persons vaccinated none developed serious influenza, and only 1.47 per cent. developed the disease in a mild form, and this within four days of the vaccination, before it had had a chance to actually immunize. The ages ranged from 15 to 30, and the vaccination was done when the epidemic was at its height. Among ninety-eight unvaccinated at the institute, 65.3 per cent. developed the disease.

Influenza Bacillus in the Air.—Negrette was able to cultivate the influenza bacillus from the air of wards containing influenza patients, but never from the air of other wards.

Vaccine Against Anthrax in Cattle.—Kraus and Beltrami urge the necessity of state control of this vaccine, and of international standards, as well as study of the doses, the immunity, its duration, etc. They urge the appointment of an international commission for this purpose.

The Prevailing Disease Among Horses.—The research reported by Kraus, Fischer and Kantor confirms that the prevailing epizootic is the typical meningo-encephalitis described by Borna.

Revista Medico-Cirurgica do Brazil, Rio de Janeiro

March, 1919, **27**, No. 3

*The Last Strongholds of Yellow Fever in Brazil. T. Torres.—p. 69.

Yellow Fever in Brazil.—Torres is the chief of the public health service in Brazil, and he expatiates on the necessity of driving yellow fever from the last strongholds in Brazil where it has sought refuge. He discusses ways and means for this, urging in particular the measures recommended by the Second Scientific Pan-American Congress aiming especially at extermination of the breeding places of mosquitoes.

Grèce Médicale, Athens

February-March, 1919, **21**, No. 3-4

*Vasomotor and Trophic Disturbances in Hysteria. E. Macris.—p. 13.
*Breaking Down of the Foot. J. G. Chrysospathis.—p. 15.
*Cycloma of the Solar Plexus. G. Dré Kolias.—p. 17.

Trophic Disturbances in Hysteria.—Macris reports the case of a hysteric young woman who each time after three sittings of hypnosis had what seemed to be nightmares in which she screamed that she was being burned, and patches of erythemia developed, with phlyctenas by the next day. She was a maid in a physician's family, and the supervision of the second and third attacks apparently excluded deception and stamped the phenomena as autosuggestion in a dream.

"Forced Foot."—Chrysospathis reports the case of a healthy soldier of 35 who after a very long and fatiguing march felt suddenly intense pain in the right foot, without trauma to explain it. One of the metatarsal bones had fractured. He ascribes this to the exhausted condition of the muscle which relaxes and allows the heads of the metatarsal bones to hit the ground. Thus fracture may result from this extreme fatigue and forcing of the foot. Besides soldiers, waiters, housekeepers and others who have to stand long on their feet are liable to develop similar disturbance, and it may return.

Disturbances from Anomalies in the Solar Plexus.—Dré Kolias ascribes to reflex action from irritation of the solar plexus a number of disturbances in the pneumogastric-sympathetic system, including hiccup, abdominal painful points, reflex disturbances in the throat, sweat glands, heart and pupils, as well as certain functional brain and spinal cord disturbances. He describes in detail a striking case in a young woman who for three years had been having pains in the stomach region and, later, also girdle pains below, various tender points in different parts of the abdomen, pains in the temples and back of the neck, with occasional loss of consciousness and vomiting. She was sent to the hospital with the diagnosis of recurring hematemesis from gastric ulcer plus hysteria. The abdomen was distended, painful at different points, especially over the adnexa, and there was a hemorrhagic gingivitis. Dré Kolias was convinced that the solar plexus was responsible for the larger part of the symptoms, and instead of operating on the stomach he opened up the solar plexus and dissected around the tripod formed by the celiac trunk, breaking the filaments of the solar plexus to detach the semilunar ganglia. The operation relieved the young woman of all pains and the "hysteric ball," and when last seen nine months afterward she was in florid health. Jaboulay published a case of the kind treated

in the same way by what he called *élongation du plexus solaire*. Dré Kolias calls the clinical picture *cyclome du plexus solaire*, and declares that his success justifies wider application of operative relief for functional disorder from the solar plexus.

Mededeel. Gen. Laboratorium te Weltevreden, Java

1919, No. 2-3. Parallel Dutch-English Edition

*Fat and Lipoid Content of Blood in the Tropics. F. and E. Weehuizen and C. Alting.—p. 29; C. D. de Langen and H. Schut.—p. 44.
*Dysenteric Bacilli. W. J. L. Dake.—p 68

Fat and Lipoid Content of the Blood in the Tropics.—There seem to be some sources of error with Bang's micromethod for determining different elements in the blood, and the research here described was undertaken to eliminate these. The methods and findings are described in detail. De Langen and Schut describe clinical experiences, all testifying to the importance of chemical examination of the blood as throwing light on metabolism. Especially in beriberi, the lipoid content of the blood seems to be connected with the disease. Hookworm induces a peculiar orange yellowish tint of the skin, showing that in this disease likewise the lipochrome content of the blood is abnormally high. The fat content of the blood is exceptionally low with beriberi, and they have noticed that persons with hookworm usually escape beriberi. In the seven cases of beriberi examined, the fat content of the blood was exceptionally low, some patients presenting less than a third of the normal figure.

Dysentery Bacilli.—Dake examined the feces of chickens, rats, dogs and rabbits besides human stools, and found frequently in them bacilli closely resembling *Bacillus dysenteriae* except in the response to agglutination and complement fixation. Animals were given true dysentery bacilli on their food, and numerous other tests were made. All the testimony thus obtained speaks in favor of the assumption that dysentery bacilli become modified outside of the body and lose their characteristics to such an extent that they come to resemble closely the dysenteriform bacilli that can be isolated from the normal human and animal intestine. Its motility, virulence for rabbits and agglutinating power may all decline, and the action on maltose and saccharose may change, but the action on mannite always persisted unmodified.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

May 3, 1919, **1**, No 18

*The Work of Leonardo da Vinci. A. J. P. van den Broek.—p. 1555.
*Purpura. C. De Lange.—p. 1564.
Paralytic Dementia or Poisoning. E. van Minden.—p. 1576.

Work of da Vinci in Anatomy and Biology.—Van den Broek analyzes da Vinci's extensive work in anatomy, biology and other branches of science, and expresses his amazement that the results of all this surprisingly accurate research did not seem to have any influence on the course of science in his day. It has been suggested that others plagiarized from him without mentioning his name. Not until the end of the last century and the first of this were his works compiled, and the discovery was then made that he must be regarded as one of the pioneers in modern anatomy, biology, etc. He studied for twenty years the question of aviation, declaring that the flying machine must be built on the principle of the body of the bird, so that the aviator "can balance himself and move through the air like a big bird, to the everlasting glory of the nest where he was born." And da Vinci died May 2, 1519! He studied plant life also, calling attention to the rings of growth in trees and explained why they were thicker on one side of the tree than on the other. The sea shells found on the tops of the mountains around Florence led him to a correct view of geological periods, so that one recent writer says of him "en créant la géologie il en a écrit un chapitre définitif." On one of his sketches is written in large letters, "The sun does not move." One of his aphorisms is that truth is always the daughter of her period.

Purpura.—De Lange lists over a dozen forms of purpura, classifying them in two great groups, those in which the blood vessels are responsible and those in which the blood or the blood-producing organs are to be incriminated. The first group is the anaphylactoid type; the second group is the Werlhof disease type. Both types occur in a chronic intermittent form, an acute or a fulminating form, and the Werlhof type may occur as a symptom in leukemia or other diseases of the blood. She gives the minute details of eight cases of these various types, one the acute infectious form of anaphylactoid purpura in a child under 3 after an infectious sore throat and otitis. The blood platelets numbered only 71,750, but in two weeks they ran up to 1,130,000 and then settled back to an average between 213,000 and 718,000. Recurring epistaxis and hemorrhages from the buccal mucosa were accompanied by petechiae on the limbs and neck. The blood findings are tabulated over a period of six months, the hemoglobin only slowly increasing from 30 to 56 per cent. and the reds from 2,660,000 to 5,580,000. In one boy of 12 there was in addition an intra-abdominal hemorrhage. Tubercle bacilli seemed to be responsible in this case. De Lange cites further a family in which apparently infectious purpura developed in parents, grandmother and three children, all within a few days, and running a mild course in all. Only one of De Lange's eight cases was of the Werlhof type. This was in the young infant of parents both subject to epistaxis. There was nothing to indicate hemophilia otherwise, although there are many reasons for accepting a connection between idiopathic Werlhof's disease and hemophilia. The prognosis in this case seems grave; it may run into aplastic anemia. In treatment of acute purpura, extract of blood platelets should be systematically given when there is thrombopeny. With the anaphylactoid form, gelatin has often given good results, but when there is thrombopeny this should be given cautiously as we know that, in dogs at least, certain colloidal substances, such as gelatin, heterogenous serums, etc., agglutinate the blood platelets, and they are then carried to the liver and destroyed.

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*Outcome after Tonsillectomy for Rheumatism. H. Nordlund.—p. 497.

Tonsillectomy and Rheumatism.—Nordlund devotes nine pages to tabulation of the details of 30 cases in which tonsillectomy was done to ward off recurring polyarticular rheumatism or hemorrhagic nephritis. This effect was realized in nearly every case, a large number having been free from recurrence since the operation. The results seem to be equally favorable whether the tonsillectomy was done during an acute attack or during an interval. The benefit was equally striking also in the 12 cases in which hemorrhagic nephritis had followed an infectious sore throat. In 6 of the 7 acute cases in this category, marked improvement was evident, but no modification was apparent in the other case nor in 3 of 5 chronic cases; the other 2 displayed pronounced benefit.

Upsala Läkareförenings Förhandlingar

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Analysis of Sensations. H. Ohrvall.—p. 317.
Localization of Sensation of "Sweet Smell" of Chloroform, etc. E. Rocén.—p. 384.
Motor Localizations in the Internal Capsule. G. Bergmark.—p. 401.
*Excitability of the Brain in Young Infants. G. Bergmark.—p. 420.

Excitability of the Brain in Very Young Infants.—Bergmark describes the results of electric and other tests on an infant, 5 weeks old, with a large hernia of the brain. Delivery had been normal but the small hernia of the brain noted at birth rapidly increased until, as the illustration shows, the circumference of the hernia was larger than that of the head, the neck of the hernia measuring 4 and 6 cm. in diameter. There was no reaction to gentle palpation of the herniated brain tissue but the child screamed with strong pressure on it. Bergmark, assisted by Bárány, applied various tests to the brain tissue which demonstrated localized responses to mechanical and thermal stimuli. The modifications under general anesthesia were interesting, as also the peculiar form of the motor response in the arm to pressure on the arm point in the neck of the hernia.